Fractal Design

# Expression™

The Revolutionary Natural-Media® Vector Drawing Tool

## User Guide

for Macintosh® & Windows™

Fractal Design

# Expression™

## User Guide

for Macintosh and Windows

**Trademarks**
Fractal Design Expression is a trademark, and Natural-Media and Fractal Design Painter are registered trademarks of Fractal Design Corporation. Creature House, the Creature House logo, and Skeletal Strokes are trademarks or registered trademarks of Creature House Ltd. QuickDraw and QuickTime are trademarks and Apple, Macintosh and Power Macintosh are registered trademarks of Apple Corporation. Windows and Video for Windows are trademarks of Microsoft Corporation. All other product and brand names mentioned in this guide are trademarks or registered trademarks of their respective holders.

**Copyright**
This manual, as well as the software described in it is furnished under license and may only be used or copied in accordance with the terms of such license. The Fractal Design Expression program © 1996 Fractal Design Corporation and Creature House Ltd., including the look and feel of the product. Fractal Design Expression User Guide © 1996 Fractal Design Corporation. No part of this guide may be reproduced in any form or by any means without the prior written permission of Fractal Design Corporation.

**Notice**
Before using this software or reading this user guide, make sure you have read, understood and agreed to the license contained in the back of the Expression User Guide.

**Credits**
Fractal Design Expression was created by Alex Hsu of Creature House Ltd. together with Water Lou, Sai-leung Siu and Irene Lee with framework support by the Fractal Design team; Pierre Berkaloff, John Stockholm and Emil Valkov. Quality Assurance testing by Randy Hollingsworth, John Parkes and Dave Couch. Product Management by Mark Kaufmann and Gray Norton. The Expression User Guide was written by Ellen Turner; edited by Kimberley Ness assisted by Gray Norton and Mary Mathis; production by Judy Severance; art directed by John Derry and Stephanie Workman; illustrated by Arena Reed, Brian Moose and Mark Jenkins. Cover artwork by Rucker Design Group. Chapter openers illustrated by Arena Reed, John Derry and Brian Moose.

Special thanks to Paul Haeberli, Mark Linton and Jock Mackinlay for their encouraging comments on the original Skeletal Strokes paper. Thanks also go to the InterViews group for many concepts and methodology in object-oriented systems demonstrated in their framework.

# Contents


**Chapter 1:**
**Overview of Expression** . . . . . 1
Starting Expression . . . . . 2
How an Expression Image is Made . . . . . 2
Natural-Media Strokes . . . . . 3
Graphic Element Strokes . . . . . 3
Multi-View Strokes . . . . . 3
Dip Right In! . . . . . 4
Expression's Interface . . . . . 4
The Toolbars . . . . . 5
Moving and Resizing Toolbars . . . . . 5
Displaying Toolbars . . . . . 5
The Standard Toolbar . . . . . 5
The Composition Toolbar . . . . . 6
Tools Toolbar . . . . . 7
The Actions Toolbar . . . . . 12
Miscellaneous Toolbar . . . . . 15
The Palettes . . . . . 16
Displaying Palettes . . . . . 16
Paint Style Palette . . . . . 17
Color Palette . . . . . 18
Custom Color Palette . . . . . 18
Stroke Warehouse Palette . . . . . 18
Panner Palette . . . . . 18
Font Palette . . . . . 19
Transformation Palette . . . . . 19
Alignment Palette . . . . . 19
Layers Palette . . . . . 19
Gradient Editor Palette . . . . . 19
Getting Acquainted with Expression's Workspace . . . . . 20
Creating a New Document . . . . . 20
Workspace . . . . . 20
Sizing Your Workspace . . . . . 20
Rulers . . . . . 21
Grid and Node Constraints . . . . . 21
The Status Bar . . . . . 21
Multiple Windows . . . . . 21
Navigating Your Document . . . . . 22
Zooming In and Out . . . . . 22
Using the Grabber Tool . . . . . 23
Changing Your View . . . . . 24
Creating a New View . . . . . 24
Setting Preferences . . . . . 25
Options Tab . . . . . 25
Color Match Tab . . . . . 26
View and Palettes Tab . . . . . 27
Raster/Scratch Tab . . . . . 28
Opening and Saving Documents . . . . . 28
Vector or Bitmap . . . . . 28
Setting Bitmap Resolution . . . . . 29
Opening Existing Documents . . . . . 30
Saving Documents . . . . . 31
Saving Multi-view Strokes As Movies . . . . . 32
Undoing Operations . . . . . 33
Reverting to the Last Saved Version 34
Closing Documents and Quitting . . . . . 34

**Chapter 2:**
**Tutorial** . . . . . 35
About This Tutorial . . . . . 36
Overview of the Sample Project . . . . . 36
The Tutorial Files . . . . . 36
Setting up Your Workspace . . . . . 36
Enjoy it! . . . . . 37
**Lesson 1:** The Dragonfly . . . . . 38
Selecting Objects . . . . . 38
Applying a Skeletal Stroke . . . . . 39
Editing the Stroke Instance . . . . . 40
Adding Color . . . . . 41
Changing the Stroke and Color . . . . 42
Saving a File . . . . . 42
**Lesson 2:** Adding More Detail to the Dragonfly . . . . . 43
Setting Attributes for Your Path . . . 43
Drawing Paths . . . . . 44
Using a Natural-Media Stroke . . . . . 45
Selecting by Stroke . . . . . 45
Changing the Stack Order . . . . . 46
Adding Wing Detail . . . . . 47
Layering . . . . . 47
Using a Supplemental Drawing Tool 48
**Lesson 3:** Completing the Poster . . . . . 49
The Grass . . . . . 49
Changing the Direction of a Path . . 50
Editing the Image . . . . . 50
Adding Text . . . . . 52
Creating a Skeletal Stroke . . . . . 52
Creating Repeating Stroke . . . . . 53
Multi-view Strokes . . . . . 54
Save the Completed Express Yourself Poster . . . . . 56
Printing Your Image . . . . . 56
Rasterizing . . . . . 57

**Chapter 3:**
**Creating Paths** . . . . . 59
Understanding Paths . . . . . 60
Drawing Tools . . . . . 61
Creating Freehand Paths . . . . . 61
Creating Bézier Paths . . . . . 62
Creating Polylines . . . . . 63
Creating B-Splines . . . . . 63
Creating Smoothed Polylines . . . . . 64

Creating Lines . . . . . 65
Creating Rectangles or Squares . . . . 65
Creating Ellipses and Circles . . . . . 66
Creating Text . . . . . 66
Creating Compound Shapes . . . . . 68
Filling Complex Shapes . . . . . 69
Using The Clipper (Masking) . . . . . 70
Using Boolean Operations . . . . . 71
Setting Boolean Preferences . . . . . 72
Applying Boolean Operations . . . . . 72
Blending Paths . . . . . 73
Tagging Paths for Blending . . . . . 74
Blending More Than Two Paths . . . . 75
Using a Stylus . . . . . 76

**Chapter 4:**
**Using Color** . . . . . 77
History of Colors . . . . . 78
The Color Palette . . . . . 78
Color Table . . . . . 78
Color Selection . . . . . 78
Current Color . . . . . 79
Attribute Buttons . . . . . 79
Using Color Models . . . . . 79
Specifying HSL Colors . . . . . 79
Specifying RGB Colors . . . . . 82
Specifying CMYK Colors . . . . . 82
Building Your Own Color Tables . . . . . 83
Blending Color Table Colors . . . . . 85
Using Custom Colors . . . . . 85
Creating Custom Colors . . . . . 86
Controlling Custom Color Tint . . . . . 87
Copying Attributes From One Object to Another . . . . . 87
Copying Colors . . . . . 87
Copying Attributes . . . . . 88
Using Gradients . . . . . 88
Applying Gradients . . . . . 88
Controlling Gradients . . . . . 89
Creating Gradient Color Schemes . . 89
Colorizing Objects . . . . . 92
Why Colorize? . . . . . 92
How to Colorize . . . . . 92
Foreground/Background Mode . . . . 92
Primary Colors Substitution Mode . 93
Removing Colorization . . . . . 94
Setting Colorize Preferences . . . . . 95
Setting Color Calibration . . . . . 95

**Chapter 5:**
**Applying Strokes and Fills** . . . . . 97
Applying Paint: The Paint Style Palette . . 98
Using Apply and Auto Apply . . . . . 98
Controlling Opacity/Transparency . 98
Using the Paint Style Palette Tabs . . 99
Changing Stroke Attributes . . . . . 99
Applying No Stroke . . . . . 99
Applying Basic Stokes . . . . . 100
Applying Gradient Strokes . . . . . 102
Applying Skeletal Strokes . . . . . 102
Applying Fills . . . . . 109
Applying Solid Fills . . . . . 110
Applying Gradient Fills . . . . . 111
Applying Pattern Fills . . . . . 111
Pattern Storage . . . . . 113
Patterns Within Strokes . . . . . 114
Patterns and Color Substitution . . . 114
Hatching . . . . . 114
Hatching Results . . . . . 115
Creating and Editing Skeletal Strokes . . 116
Using Anchoring . . . . . 118
Repeating Elements of a Stroke . . . 120
Creating Multi-view Strokes . . . . . 122
Adding Views . . . . . 124
Removing a View . . . . . 125
Moving a View . . . . . 126
Saving Multi-view Strokes as Animation 126
Choosing Video Compression . . . . . 128

**Chapter 6:**
**Arranging and Editing Objects** . 131
Objects, Paths and Points . . . . . 132
Selecting Objects and Points . . . . . 132
Mouse Hints and Tips . . . . . 132
Selecting Objects . . . . . 133
Selecting Points . . . . . 134
Viewing Selected Objects and Points . . . . . 135
Transforming Objects . . . . . 136
Moving Objects . . . . . 136
Scaling Objects . . . . . 137
Rotating Objects . . . . . 138
Mirroring Images . . . . . 140
Shearing Objects . . . . . 141
Changing Perspective . . . . . 142
Transformation Shortcuts . . . . . 143
Grouping and Ungrouping Objects . . . . 144
Duplicating Objects . . . . . 145
Cloning Objects . . . . . 146
Arranging Objects . . . . . 147
Aligning Objects . . . . . 147
Distributing Objects . . . . . 149
Stacking Objects . . . . . 151
Layering Objects . . . . . 152
Editing Paths . . . . . 156
Selecting and Moving Points . . . . . 156
Changing Point Continuity . . . . . 157
Converting Points . . . . . 158
Adding Points . . . . . 158
Deleting Points . . . . . 159
Splitting Paths . . . . . 159
Reversing Path Direction . . . . . 160
Changing the Starting Point . . . . . 160
Changing the Path Direction . . . . . 160
Unstructuring Objects . . . . . 161
Converting Objects to Bézier Paths . . . 162
Editing Ellipses . . . . . 162

**Chapter 7:**
**Printing** . . . . . 165
Printing from Expression . . . . . 166
Printing Images with Transparency . . . 166
Quality Considerations . . . . . 166
Performance Considerations . . . . . 167
Printing Color Separations of
Expression Artwork . . . . . 168
Printable Area . . . . . 168
Printing Your Work . . . . . 169

**Appendix A:**
**Technical Tips** . . . . . 171
Before You Call Technical Support . . . . 172
Macintosh . . . . . 172
Windows . . . . . 173
Set Up . . . . . 174
Contacting Technical Support . . . . . 175
Other Ways to Contact
Technical Support . . . . . 175

**Appendix B:**
**Glossary** . . . . . 177

**Index** . . . . . 183

**Fractal Design License**
**Agreement** . . . . . 193

**Fractal Design Expression**
**Troubleshooting Worksheet** . . . 194

# Welcome to Expression

Imagine... the stylistic expressiveness of pencils, brush strokes and other traditional artists' tools, combined with the incredible flexibility, speed, editability and resolution independence of an advanced, vector-based drawing application. As the first Natural-Media® drawing program, Fractal Design Expression software will change the way you think about vector-based illustration and the way you work as a computer artist.

Expression's power and agility come from its exclusive Skeletal Strokes™ technology. For the first time ever, artists can use a single vector path to draw or edit sophisticated, multi-element strokes or even complete illustrations. Simply select a drawing tool and a stroke style, and begin drawing.

To further enhance the Natural-Media feel, Expression has full support for pressure sensitive tablets. Using the freehand tool and simple, natural gestures, the Expression artist can vary stroke widths by pressing on the tablet. In addition, Expression is the first full-featured illustration application to support transparency, allowing you to "layer" your strokes, an effect previously available only in bitmap paint programs.

The result is Natural-Media artwork never before possible in vector based drawing applications such as Adobe Illustrator™, Macromedia FreeHand™, and CorelDRAW!™.

Built-in artistic expression.

## Built-In Artistic Expression

Expression's ability to use sophisticated vector shapes to create a stroke gives users unprecedented creative freedom. Artists can choose from three different types of strokes to apply to their illustrations:

### Natural-Media Strokes

Natural-Media strokes mimic traditional artist tools such as paint brushes, pencils and pens.

### Graphic Element Strokes

Graphic Element strokes include individual drawings and objects, similar to vector-based clip art, but can be applied along any drawing path.

### Multi-view Strokes

Multi-view strokes can incorporate both natural media and graphic elements, but contain multiple views of the stroke. Expression will automatically interpolate in between any of these views allowing the artist to add a more "random" look to his illustrations or even save them in QuickTime or AVI animations.

Expression comes with over 350 built in strokes, but the artist can easy create their own custom strokes using any of the drawing tools, or by importing graphics from other vector based drawing applications.

The artist has complete control to modify the stroke's attributes. Strokes can include an unlimited number of separate paths and control points, variable widths, anchor points and repeatable areas.

## Professional-level Illustration

Expression provides a full complement of professional-level drawing tools and a variety of vector-based operations such as layering, scaling, compounding, and blending of shapes. The Expression artist can rotate, skew, mirror and even add perspective to the vector objects in the illustration. This level of flexibility allows artists to create and transform objects easily.

## A Powerful Complement to Existing Drawing Tools

While Expression is a full featured, standalone application, it is also designed to complement existing drawing programs such as Adobe Illustrator, Micromedia FreeHand, and CorelDRAW!. The Expression interface and tools work similarly to these familiar applications. To streamline the integration with other desktop tools, Expression supports import and export to a wide variety of formats, including the standard vector formats, bitmap formats and animation formats.

## Other Goodies

Expression ships with an array of content that includes more than 150 Natural-Media and Multi-view Strokes, 200 Graphic Element strokes, and more than 35 hatching, paper grain, and vector patterns. Expression also includes tools for fine tuning perspective, anti-aliasing, custom color support, as well as basic page layout capabilities and font handling.

## Compatibility

Expression works with art created in other drawing programs such as Adobe Illustrator and CorelDRAW!.

Expression supports export to: Photoshop 2.5, BMP, PCX, PICT and TIFF rasterized bitmap formats, Adobe Illustrator versions 3 - 6, CorelDRAW! versions 3, 4, and 5, CGM, EPS, PICT and WMF vector formats, as well as AVI and QuickTime animation file formats.

## About this User Guide

This user guide is a cross-platform manual, designed for use with the Windows and Macintosh versions of the Expression software. Dialogs and windows displayed in this guide were taken from both versions of Expression. In some cases, where there were significant differences between platforms, both versions are shown.

### The Guide

The first chapter is an introduction. The second chapter provides a comprehensive tutorial to get you familiar with Expression's features. The third chapter explains how to create paths on which you can apply Expression's powerful vector strokes. The fourth chapter describes how to use and choose colors for your images. The fifth chapter contains information on designing and using strokes and fills.The sixth chapter describes how to edit and arrange your paths and strokes. The seventh chapter contains information on printing.

The first appendix describes common problems encountered while using Expression and possible solutions. The second appendix is a glossary of new terms used throughout the manual and in the Expression application.

**Note:** We realize that you may not have time to read this entire manual, but the information in Chapter 2 would be very valuable in getting you comfortable enough to start experimenting on your own.

### Modifier Keys

When a modifier key differs between the Macintosh and Windows platform, the Macintosh modifier is listed first followed by a slash and the Windows modifier key. **Option/Alt** means Macintosh users press the **Option** key and Windows users press the **Alt** Key.

### References

When a referral appears, directing you to another chapter in the book, it is highlighted in turquoise.

### Conventions

There are several conventions used to identify paths to certain tools and controls. The convention to a menu follows the rule of the **menu name▸ menu item**. The convention to a palette follows the rule of the **palette name: palette item**.

### Terms

Any term first introduced appears in italic. This word and its definition also appears in ➤Appendix B, "Glossary."

## Technical Support

You will find the answers to most of your questions within the pages of this User Guide. Please check our Web site (www.fractal.com) for the most up to date information regarding Expression, a list of the most frequently asked questions and handy tips and tricks.

If you need further assistance, you may contact Fractal Design's Technical Support in any of the following ways:

**Phone:** 408-430-4200 between the hours of 8am and 5pm, Pacific Standard Time

**FAX:** 408-430-9672

**email:** mac_support@fractal.com

win_support@fractal.com

**Mail:** Technical Support
c/o Fractal Design Corporation
P.O. Box 66959
Scotts Valley, CA 95067-6959

## For More Information

For more information about Fractal Design products, see our World Wide Web site on the Internet:

**www:** http://www.fractal.com

To exchange tips and techniques with other users, see the following:

**AOL:** Keyword "Fractal"

**CompuServe:** "GO GUGPRA"

## Ultimate Symbol

The 200 strokes includes in the **Ult Symb Stroke** directory were chosen specifically for use in Expression from the Design Elements– A Digital Reference™, a collection of more than 3280 images by Ultimate Symbol Inc. All images are copyright ©1994 Ultimate Symbol, Inc.

For more information or a free brochure about the Ultimate Symbol Collection, contact:

**Ultimate Symbol Inc.**
31 Wilderness Drive
Stony Point, NY 10980
phone: 914-942-0003
fax: 914-942-0004

# 1

# Overview of Expression

Even if you are experienced with vector-based graphics applications, this chapter will familiarize you with Expression's interface and basic functions. If you are anxious to get started, you can skip this chapter and use it as a pictorial reference for tools and palettes. The tutorial in Chapter 2 can be used to acquaint you with most of Expression's tools and techniques.

## Starting Expression

The first time you start Expression, you are asked for your serial number.

The serial number is located on the "Read This First" card and the Registration card.

### To start Expression on a Macintosh:

1. Double-click the **Expression** icon. The Expression tools and palettes appear.
2. Choose the **New File** button from the **Standard** toolbar to open a new document. You can also choose **File menu▸ New**.

Choose the New File button.

### To start Expression in Windows:

1. Choose **Start menu▸ Programs▸ Fractal Design Expression▸ Fractal Design Expression** or double-click the **Expression** icon. The Expression tools and palettes appear.
2. Choose the **New File** button from the **Standard** toolbar to open a new document. You can also choose **File menu▸ New**.

Choose the New File button.

## How an Expression Image is Made

Like most drawing software programs, Expression's objects are comprised of paths. A path is a sequence of points (nodes) connected together as lines or curves. Expression allows an arbitrary mixture of straight-lines, Bézier curves and B-Spline curves linked together to form a path.

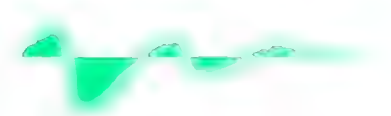
Each path is assigned a stroke and a fill. Stroke refers to the outline or edge of an object. Picking a stroke in Expression is similar to picking up an artist's brush.

Fill refers to the inside color or pattern. Expression combines the stylistic expressiveness of paint, brush strokes and other traditional artists' tools with the flexibility, speed, edibility and resolution independence of an advanced, vector based drawing application.

Vector path.



Vector path with stroke.



Vector path with stroke and fill.

Most drawing programs are limited to the attributes which can be assigned to strokes and fills. Expression removes this limitation. With Expression, you can designate any vector picture as a stroke. This Skeletal Stroke™ technology can be applied to boxes, text, freeform shapes, lines—anything you can create in Expression.

Expression uses three types of Skeletal Strokes:

- Natural-Media strokes
- Graphic Element strokes
- Multi-view strokes

## Natural-Media Strokes

These strokes mimic traditional artist tools such as paint brushes, pencils and pens.

Natural-Media stroke.

## Graphic Element Strokes

These strokes contain vector drawings and objects. You can create a stroke out of any vector graphic.

Graphic Element stroke.

## Multi-View Strokes

Multi-view strokes incorporate both Natural-Media and graphic elements and consist of two or more related pictures. Expression automatically creates additional views in between those you start with, allowing you to quickly create related but non-identical images.

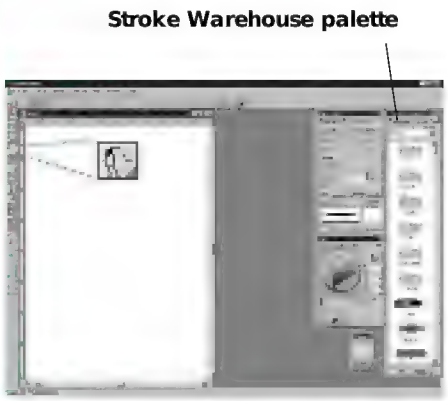
As you can see in the examples, Expression creates in between views showing varying degrees of each element. Each time you apply a Multi-view stroke, you can specify which view is displayed or let Expression create them randomly. Multi-view strokes can also be saved as animations (QuickTime for Macintosh or AVI for Windows).

Multi-view stroke of Natural-Media.

Multi-view stroke of a Graphic Element.

## Dip Right In!

Since we know you are anxious to get started, we'll introduce you to Expression at its most basic— creating a path and assigning a stroke.




Expression interface.

**Try this:**

1. Choose **File menu▸ New** to open a new document.
2. Scroll through the **Stroke Warehouse** palette to preview the hundreds of pre-designed stokes available in Expression.
3. Click on a stroke to select it.

Select a stroke from the Stroke Warehouse palette.

4. Choose the **Freehand** tool from the **Tools** toolbar.

Choose the Freehand tool.

5. Using the Freehand tool, draw a path. The stroke you selected is applied to the path you created!

That's all there is to it. Take some time to experiment with some of the other drawing tools.

## Expression's Interface

Expression's interface consists of several types of toolbars and palettes. Some of the toolbars and palettes open automatically when you launch Expression. You can hide, display or move any or all of the toolbars and palettes on your workspace to meet your particular working style. Each of the toolbars is explained later in this chapter. First we will show you how to select and arrange toolbars in the Expression workspace.

# The Toolbars

When you launch Expression some toolbars are displayed along the top and left side of the window.

## Moving and Resizing Toolbars

To change the location of a toolbar, click-drag in the gray toolbar frame area. Drag the toolbar to the middle of the window to let the toolbar float or drag a floating toolbar to the top, bottom, left, or right edge of the screen to dock the toolbar.

Moving your toolbars

The floating toolbars can be resized by dragging at the corners. Reposition a floating toolbar by dragging its title bar.

Resizing your toolbars.

## Displaying Toolbars

Expression allows you to customize your workspace by displaying the tools you use the most and hiding those you use less frequently.

**To select which toolbars are displayed:**

1. Choose **Window menu▸ Toolbars**. The Toolbars dialog appears. Toolbars currently displayed on your workspace have a check mark in front of their name.

The Toolbars dialog.

2. Click to select or deselect the toolbars you want to display.
3. Click **OK**. All selected toolbars appear on the workspace. You can resize and move toolbars as needed.

## The Standard Toolbar

The **Standard** toolbar contains buttons for basic File menu commands. Choose **Window menu▸ Toolbars: Standard** to toggle the Standard toolbar on and off. The Standard toolbar contains the following buttons:

The Standard toolbar.

### New File

Creates a new Expression document.

### Open File

Opens the standard Open dialog, allowing you to open an existing Expression document or graphics file. To limit file type to a specific file format, select the preferred type from the **Format** or **Files of Type** field.

### Save File

Saves the current document to hard drive, floppy diskette, or other selected media.

### Print

Displays the standard Print dialog, allowing you to print the current document.

### Cut

Removes selected object(s) from the workspace and saves the selection to the Clipboard until another selection is cut or copied.

### Copy

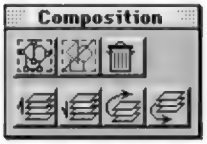
Copies selected object(s) to the Clipboard and saves the selection until another selection is cut or copied.

### Paste

Inserts information previously stored in the Clipboard into the document.

## The Composition Toolbar

The **Composition** toolbar contains buttons that allow you to edit your document by clicking rather than using command keystrokes. Choose **Window menu▸ Toolbars: Composition** to toggle the Composition toolbar on and off. The Composition toolbar contains the following buttons:




The Composition toolbar.

### Select All

Selects all objects in the current document.

### Deselect All

Deselects all objects in the current document.

### Delete Selection

Deletes all selected objects. The objects are not stored in the Clipboard. However, you can use Expression's Undo function to return the deleted selection.

### Up One

Moves the currently selected object up one level in the stack order of the current layer.

### Down One

Moves the currently selected object down one level in the stack order of the current layer.

### To Top

Moves the currently selected object to the top level of the stack on the current layer.

### To Bottom

Moves the currently selected object to the bottom level of the stack on the current layer.

➔ **Note:** Objects on the top draw last and therefore are not obscured by any other objects. Objects on top appear to be in front of any other objects on the same layer.

## Tools Toolbar

The **Tools** toolbar contains tools for basic object drawing and manipulation. Choose **Window menu▸ Toolbars: Tools** to toggle the Tools toolbar on and off. For more information regarding the Tools toolbar see ➤Chapter 6, "Arranging and Editing Objects."

The Tools toolbar contains the following tools:

The Tools toolbar.

### Selection Tools

The Selection tools.

The Object Selection and Group Selection tools allow you to select individual objects or groups of objects.

#### Object Selection Tool

Selects objects or groups of objects.

#### Group Selection Tool

Selects an individual object within a group. Clicking again on the object selects the entire group.

### Node Tools

The Node tools.

The Node Selection and Convert Node tools are used to select and edit points within an object. Nodes are vector points used to define a path.

#### Node Selection Tool

Selects points on a path.

#### Convert Node Tool

Converts the characteristics of points from corner to curve or vice-versa.

### Path Tools

The Path tools.

The Add Node, Delete Node, Split Path, Reverse Path and Change Start Point tools are used to alter the path of a selected object. In order to use these tools the path must be selected.

#### Add Node Tool

Adds a new point along a selected path.

#### Delete Node Tool

Removes a point from selected path.

#### Split Path Tool

Cuts the path into two segments.

Splitting a path, before and after.

### Reverse Path Tool

Reverses the direction of the path and its Skeletal Stroke, if any.



Reverse path, before and after.

### Change Start Point Tool

Relocates the starting point for the path, moving the starting point of any Skeletal Stroke to the new location.

Change Start Point, before and after.

### Grabber Tool

Provides an alternative way to scroll an image. Click in the workspace and drag to move the page.

### Magnifier Tool

Allows you to magnify areas of an image when you are performing detailed work, or reduce your workspace to get an overall view of an image. Click to zoom in, or hold the **Option/Alt** key and click to zoom out. You can also drag a marquee to zoom into a specific area.

### Classic Drawing Tools

The Classic Drawing tools

These tools are used to draw freeform shapes. After creating paths, you can use the Path tools (described above) to edit any path. For additional information regarding the drawing tools, see ➤Chapter 3, "Creating Paths."

### Freehand Tool

Creates shape paths by drawing freehand lines.

Freehand path.

### Pen Tool

Creates shape paths using standard Bézier points.

Pen path.

### Supplemental Drawing Tools

The Supplemental Drawing tools.

Expression's Polyline, B-Spline and Smoothed Polyline tools provide additional ways of creating paths. These are especially useful for creating stylized artwork.

For more information regarding these tools, see ➤"Drawing Tools" in Chapter 3, "Creating Paths."

### Polyline Tool

Draws straight line and circular arc line segments.

Polyline path.

### B-Spline Tool

Draws smooth curves based on straight line control polygon.

B-Spline path.

### Smoothed Polyline Tool

Draws curved line segments.

Smoothed Polyline path.

### Line Tool

Draws straight lines. Hold down the **Shift** key to constrain your line to 45° increments. For information on setting the angle of constraint, see ➤"Setting Preferences," later in this chapter.



Line object.

### Shape Object Tools

The Shape Object tools.

These tools are used to draw rectangles, squares, ellipses (ovals) and circles.

### Rectangle Tool

Creates rectangles and squares. Hold down the **Shift** key to constrain the object to a square.

### Ellipse Tool

Creates ellipses or circles. Hold down the **Shift** key to constrain the object to a circle.

### Text Tool

Creates text objects. Text objects can be applied to a path. Each letter can be assigned a distinct stroke and fill. Text can be converted to a path so you can edit the shape of each letter. For more information on working with text, see ➤Chapter 3, "Creating Paths."

### Gradient Tool

Controls the direction and rate of change for a gradient stroke or fill.

Objects containing gradients.

### Dropper Tools

The Dropper tools

These tools allow you to quickly copy color or stroke and fill attributes from one part of your artwork to another.

### Color Dropper Tool

Picks up color from one object, or area of an object, so you can drop the color onto another object or area.

### Attribute Dropper Tool

Picks up the stroke and fill attributes from one object, so you can drop the attributes onto another object.

### Transformation Tools

The Transformation tools.

These tools are used to transform selected objects by rotating, scaling, mirroring, shearing, or applying perspective. For more information regarding the Transformation Tools, see ➤"Transforming Objects" in Chapter 6, "Arranging and Editing Objects."

### Rotation Tool

Allows you to rotate selection. Click to set the center of rotation, then click-drag to rotate selection.

### Scale Tool

Allows you to change the size of selected object. Click to set the anchor for the scaling, then click-drag to scale selection.

### Mirror Tool

Allows you to create a mirror image of the selected object. Click to set the center for the reflection, then click-drag to mirror the selection.

### Shear Tool

Allows you to shear or skew the selected object. Click to set the center for the shear, then click-drag to skew the selection. For more information regarding the Shear tool, see ➤"Shearing Objects" in Chapter 6, "Arranging and Editing Objects."

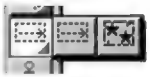
### Perspective Tool

Allows you to apply a perspective effect to any selected object(s). This tool has two modes. In the first mode, an object is framed in preparation for applying perspective. In the second mode, drag the corners of the frame to apply perspective.

When the perspective tool is first selected, it is in the framing mode. Drag the four small corner handles to set the perspective frame. Then click once off the object to switch to perspective mode; The handles become larger. Drag the handles to apply perspective.

Before and after perspective.

### Definition Tools



The Definition tools.

These tools are used to define Skeletal Strokes as well as Patterns to use as fills. For more information regarding these tools, see ➤"Creating and Editing Skeletal Strokes" and ➤"Applying Pattern Fills" in Chapter 5, "Applying Strokes and Fills."

### Stroke Definition Box

Opens the Stroke Definition window, allowing you to create a Skeletal Stroke. Choose the Stroke Definition Box tool and drag a marquee around the artwork you wish to use as a Skeletal Stroke. The Stroke Definition window opens. To complete the stroke, click the **Define** button at the bottom of the window. Give your stroke a name.

### Pattern Definition Box

Allows you to define a new pattern from any artwork in the current document. Choose the Pattern Definition Box tool and drag a marquee around the artwork you wish to use as a Pattern. The artwork within the marquee is repeated as a pattern. To complete the pattern, click the **Define** button at the bottom of the window. Give your pattern a name. If you decide you don't want to define the pattern press the **Delete/Backspace** key while the pattern box is selected.

### Anchor Tool/Repeat Tool

The Anchor/Repeat tools.

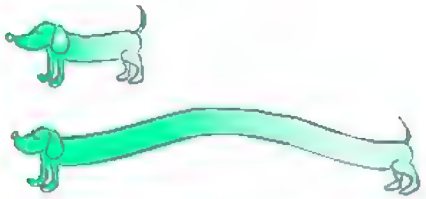
These tools are used to control the behavior of particular parts of a Skeletal Stroke and are available only when the Stroke Definition window is active. As a Skeletal Stroke is applied to a path it can be useful to have certain parts maintain their original proportions, while other parts of the same stroke are stretched along the path. Likewise, it can be useful to specify that certain parts should repeat along the path, rather than stretch.

For more information regarding these tools, see ➤"Using Anchoring" and ➤"Repeating Elements of a Stroke" in Chapter 5, "Applying Strokes and Fills."

### Anchor Tool

Allows you to anchor selected points so they remain a constant proportion when a Skeletal Stroke is applied to a path. This is used when you want specific parts of a Skeletal Stroke to maintain their original proportions. For example, the dog stroke

below is defined with the head and tail parts anchored to the beginning and ending points of the stroke. The section between the two anchored areas can stretch on any long path but the tail and head remain the same.

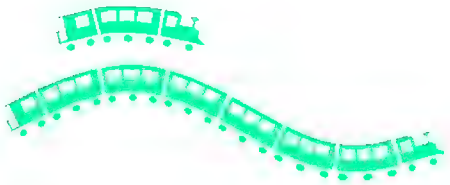


Anchoring parts of a stroke.

To use this feature you must first use the **Stroke Definition Box** tool to select artwork that will be used as a stroke.

### Repeat Tool

Allows you to define selected objects to repeat rather than distort as Skeletal Stroke is applied to path. For example, you might create a train with an engine, a passenger car and a caboose. Anchor the engine to the beginning point and the caboose to the ending point. Then define the passenger car as repeating. The length of path to which you apply such a stroke determines how many passenger cars are contained in your train.



Repeating parts of a stroke.

## The Actions Toolbar

The **Actions** toolbar includes controls for the behavior of node tangent handles as well as the Ellipse Closure controls, Anchor and Repeat controls and the Pressure Sensitivity buttons. Choose **Window menu▸ Toolbars: Actions** to toggle the Actions toolbar on or off. The Actions toolbar contains the following buttons:

The Actions toolbar

### Node Continuity Controls

The Node Continuity controls.

A pair of tangent handles is attached to each Bézier node on a path. The position of the tangent handles controls the shape of the path between nodes. Nodes that are corner points have their tangent handles retracted so you can not see them.

The Node Continuity buttons determine how selected nodes and handles are controlled when editing. Select a node then click the preferred Node Continuity button. For more information regarding Node Continuity see ➤"Selecting and Moving Points" in Chapter 6, "Arranging and Editing Objects."

**Symmetrical**

Positions the tangent handles so they are opposite each other and equidistant from the node.

**Smooth**

Positions the tangent handles so they are opposite each other. In this case, changing the distance from the node of one handle does not change the distance of the other.

**Angle Locked**

Positions the tangent handles so they are locked in relation to each other. Moving one handle causes the other handle to move the same angular distance and direction.

**Unconstrained**

Allows tangent handles to move independently of each other.

Unconstrained tangent handles.

**Ellipse Closure Controls**

The Ellipse Closure controls.

These buttons allow you to control how an open ellipse is closed. Expression's ellipse is a special case object. After creating an ellipse you can drag its single point with the Select Node tool to open it up, then use one of the following buttons to complete the shape. For additional information regarding the Ellipse Closure Controls, see ➤"Editing Ellipses" in Chapter 6, "Arranging and Editing Objects."

**Open Arc**

Allows you to create an open ellipse line segment.

Ellipse as an arc.

**Pie**

Allows you to create an ellipse line segment closed by a pair of straight lines. These lines connect with each other in the center of the ellipse.

Ellipse with pie line segments.

**Add Chord**

Allows you to create an ellipse line segment with a flat side. The ellipse is closed by a straight line segment from beginning point to ending point.

Ellipse with a chord line segment.

### Anchor Controls

The Anchor controls.

These tools are only available if the Anchor tool has been used to select anchor points in the Stroke Definition window. Use the Anchor Control tools to control the behavior of anchored points.

Within the Stroke Definition window, use the Anchor tool to drag a marquee to select the points you want to anchor. Then, click the Anchor Control that describes the type of anchor you wish to apply to the selected nodes. For additional information regarding Anchor Controls, see ➤"Using Anchoring" in Chapter 5, "Applying Strokes and Fills."

#### Anchor at Start

Constrains selected points to the start of the Skeletal Stroke as it is applied to a path.

#### Anchor at End

Constrains selected points to the end of the Skeletal Stroke as it is applied to a path.

#### Anchor at Fixed Point

Constrains selected points to a specific part of the Skeletal Stroke as it is applied to a path.

#### Free Anchor

Removes anchor constraint from selected point.

### Repeating Control

The Repeating Control tools.

These tools are only available if the Repeat tool has been used to select objects to repeat in the Stroke Definition window. Use the Repeating Control tools to control the behavior of repeating objects.

Within the Stroke Definition window, use the Repeat tool to select the objects you want to repeat. Then, click the Make Repeating button to make the selected objects repeating or click the Make Non-repeating button to remove the repeating function from the selected objects. For additional information regarding Repeating Controls, ➤"Repeating Elements of a Stroke" in Chapter 5, "Applying Strokes and Fills."

#### Make Repeating

Repeats the selected objects within the stroke based on length of path.

#### Make Non-repeating

Removes the repeating function from the selected objects.

### Pressure Sensitivity Controls

The Pressure Sensitivity Controls

These buttons toggle pressure sensitivity on or off. These functions are only available when a pressure sensitive drawing tablet is used instead of a mouse.

Pressure sensitivity applies only to the Freehand tool.

#### Disable Pressure Sensitivity

Allows a pressure sensitive graphics tablet to behave just as a mouse device.

### Enable Pressure Sensitivity

Allows you to vary the width of a Skeletal Stroke based on the amount of pressure applied when using a pressure sensitive graphics tablet. Strokes appear thin where light pressure is applied, and thicker where heavy pressure is applied.

## Miscellaneous Toolbar

The Miscellaneous Toolbar controls Blending and Boolean operations (also known as pathfinder operations to Adobe Illustrator users).

Choose **Window menu▸ Toolbars: Miscellaneous** to toggle the Miscellaneous toolbar on or off. For additional information regarding Blending Paths ➤"Blending Paths" in Chapter 3, "Creating Paths." For more information regarding Boolean Operations, see ➤"Using Boolean Operations" in Chapter 3, "Creating Paths." The Miscellaneous toolbar contains the following buttons:

The Miscellaneous toolbar.

### Blend Paths

Creates a series of new paths based on two selected paths.

Blend Paths, before and after.

### Union

Creates a new path based on the outline of all selected source paths as if they were merged into one object. Paths inside are ignored.

Union, before and after.

### Front-Back

Creates a new path that contains areas in the front path that are not overlapped by areas in the back path.

Front-Back, before and after.

**Back-Front**

Creates a new path that contains areas in the back path that are not overlapped by areas of the front path.

Back-Front, before and after.

**Intersection**

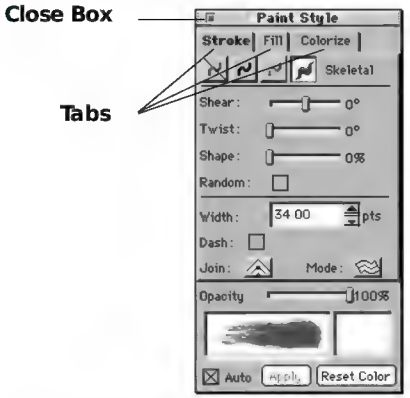
Creates a new path that contains areas where the selected source paths overlap. Areas and paths that do not overlap are ignored.

Intersection, before and after.

## The Palettes

Expression uses a variety of palettes to control specific functions. Most of these functions are not available elsewhere in Expression. You will find that certain palettes are so crucial to your work that you will always want them open.

Some palettes include tabs that open additional layers of the palette. Clicking a tab brings specific information forward so you can select options relating to the particular function listed on the tab.

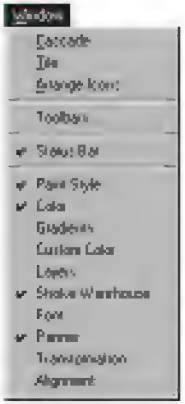



A palette with tabs.

Use the close button in the title bar to hide unused palettes. The title bar also contains the name of each palette. Drag the title bar to move the palette on the screen.

### Displaying Palettes

The Window menu contains the name of each palette available in Expression. To open a palette, choose a palette name from the Window menu. A check mark appears next to open palettes.



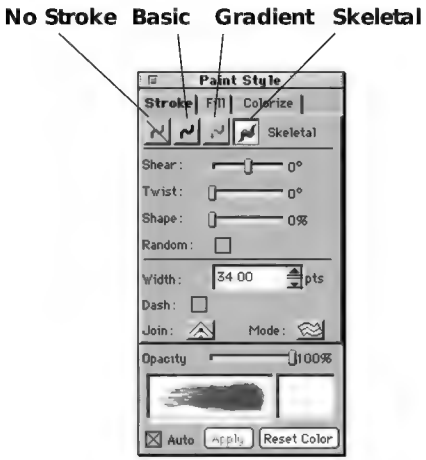

Check marks appear next to open palettes.

Rather than describe each palette in depth here, we will refer you the chapter that explains each palette in detail.

## Paint Style Palette

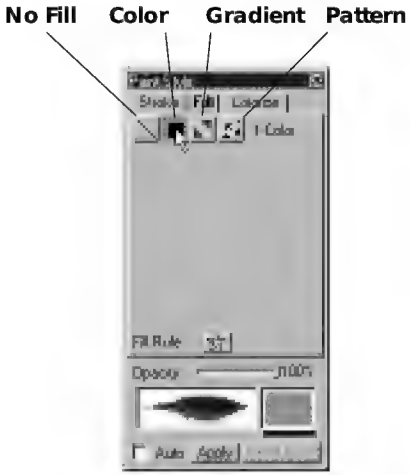
This palette controls how your path is displayed including stroke, fill and color. Use the Paint Style palette to assign the stroke and fill you prefer.

Your stroke may be none, Basic (a fixed width with solid color), Gradient (a fixed width with gradient color) or a Skeletal Stroke. Use the **Stroke** tab to select the style of stroke you prefer.



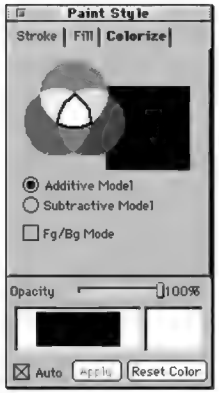

Select a stroke style.

Your fill may be none, a plain color, a gradient or a pattern. Use the **Fill** tab to select the style of fill you prefer. For more information regarding stroke and fill see ➤Chapter 5, "Applying Strokes and Fills."




Select a fill style.

The **Colorize** tab of the Paint Style palette gives you several ways of controlling the colors used in your strokes. Changes made in this area affect all selected objects and any new path you draw while the same Skeletal Stroke is selected. For more information regarding Colorize, see ➤"Colorizing Objects" in Chapter 4, "Using Color."

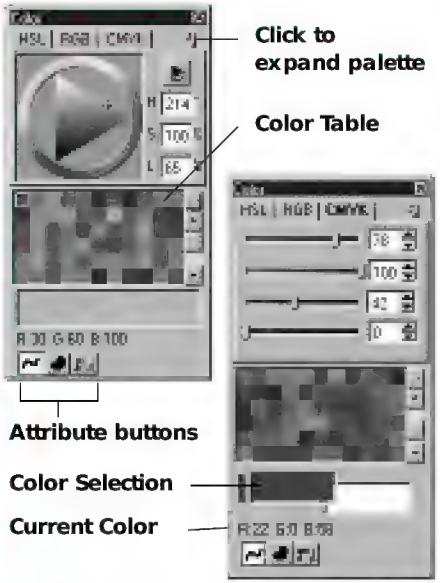



Use the Colorize tab to adjust the colors within a Skeletal Stroke.

## Color Palette

This palette controls the use of colors. When you set the stroke and/or the fill to plain color or a gradient, you can then use the Color palette to select colors.

Select a color model, then enter a color value (RGB and CMYK) or click on the color wheel to see the range of colors available in the Value Picker (HSL). For specific information regarding color and gradients see ➤"The Color Palette" in Chapter 4, "Using Color."




The Color palette.

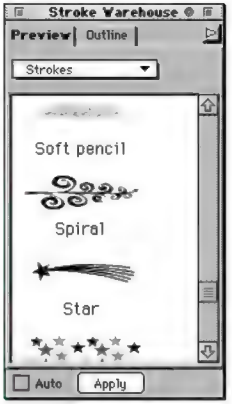
## Custom Color Palette

This palette contains a list of custom colors which you can apply to any document. For more information regarding custom color, see ➤"Using Custom Colors" in Chapter 4, "Using Color."

The Custom Color palette.

## Stroke Warehouse Palette

This palette contains a selection of pre-designed Natural-Media, Graphic Element, and Multi-view strokes. Each stroke can be thought of as a customized brush. Strokes can be applied to any path in Expression. For more information about the Stroke Warehouse palette see ➤Chapter 5, "Applying Strokes and Fills."




The Stroke Warehouse palette.

## Panner Palette

Use this palette to quickly reposition your page so you can draw in a manner that is comfortable for you. Click the side arrows to rotate the page clockwise or counter-clockwise. Click the plus or minus button to move the page forward or backward.

The Panner palette, Windows and Macintosh versions.

## Font Palette

Use this palette to select the font and other attributes for Text objects. For more information regarding Text, see ➤"Creating Text" in Chapter 3, "Creating Paths."

The Font palette.

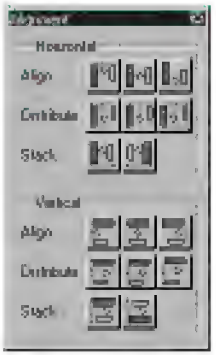
## Transformation Palette

Use this palette to translate (move), rotate, shear, mirror or scale objects. Use the small arrows to the right or left of the tabs to display additional tabs as you need them. Click **Apply** to apply your changes to any selected object. Use the **Duplicate** button instead of the **Apply** button to create a duplicate of the selected object as you transform it, leaving your original object untouched. For more information on transformation, see ➤"Arranging Objects" in Chapter 6, "Arranging and Editing Objects."

The Transformation palette.

## Alignment Palette

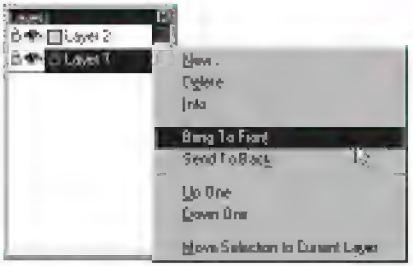
Use this palette to align, distribute or stack objects. For more information on Alignment, see ➤"Aligning Objects" in Chapter 6, "Arranging and Editing Objects."



The Alignment palette.

## Layers Palette

Use this palette to add, delete, select, name, lock/unlock or hide/show layers. For more information on Layers, see ➤"Layering Objects" in Chapter 6, "Arranging and Editing Objects."




The Layers palette.

## Gradient Editor Palette

This palette can be used to add, delete and edit gradients. For more information on gradients, see ➤"Using Gradients" in Chapter 4, "Using Color."

The Gradient Editor palette.

# Getting Acquainted with Expression's Workspace

This section outlines how to customize the workspace to match your own style of work. You'll learn how to use Grids and Rulers and how to set your preferences.

## Creating a New Document

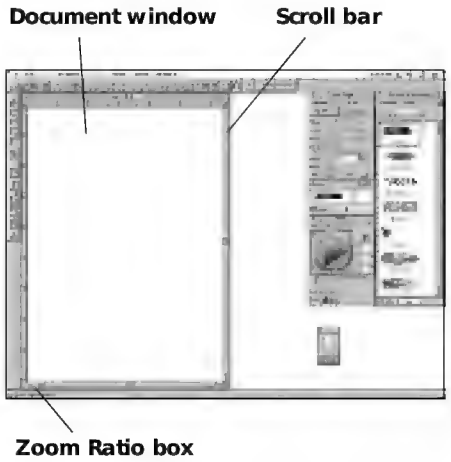
To create a new document choose **File menu▸ New** or **Command/Ctrl+N** or click the **New File** button on the **Standard** toolbar.

New Expression document.

## Workspace

Use the scroll bars on the right and bottom of the document to move the page. The workspace is larger than the page that prints so be careful to keep your artwork inside the page outline if you want it to be part of your printed document.

Use the remainder of the space as a desktop or drawing board. For example, you might work off the page when creating new strokes. Then work on the page when applying the stroke to a path as part of your image.



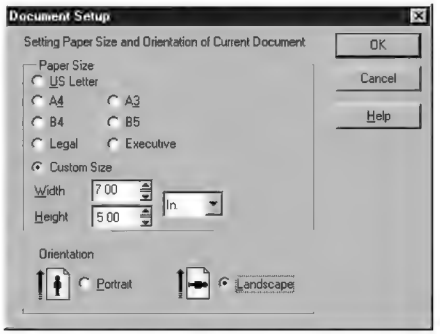

The Expression workspace.

## Sizing Your Workspace

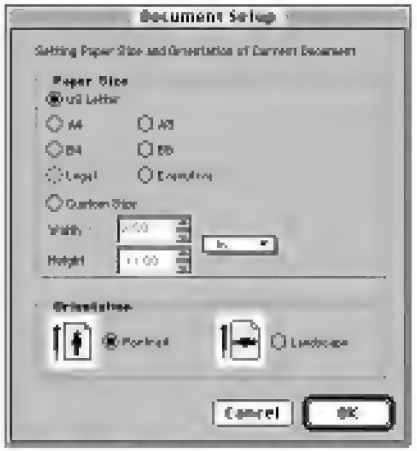
After you create a new document, you can set the size of your page, page orientation and unit of measurement to accommodate the size of the drawing you are going to create.

**To adjust the size of your workspace:**

1. Choose **File menu▸ Document Setup**. The Document Setup dialog appears.




Windows Document Setup dialog.



Macintosh Document Setup dialog.

2. Click on the pop-up next to the Width and Height controls to display and select a unit of measurement.

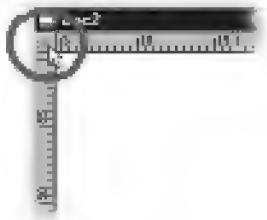
3. Select or enter the size for your page and the orientation of the page.

4. Click **OK**. The size of the workspace in the current document changes to reflect your selections.

## Rulers

The document window includes rulers on the top and left side. As you move the cursor around the window a line on each ruler indicates the cursor position. You can change the rulers from the default inches to pica or points by clicking the small box at the upper left corner. You can toggle the rulers by choosing **View menu▸ Show Rulers**.

You can also scroll the view by placing the cursor on the vertical or horizontal ruler. When the cursor changes to a hand, drag to scroll the view.


Click to change the ruler measurements.

## Grid and Node Constraints

Expression provides you with a grid to aid in arranging objects. To toggle the grid on or off choose **View menu▸ Show Grid**.

For information on setting the size of the grid see ➤"Setting Preferences," later in this chapter.

When **View menu▸ Snap to Grid** is active, all drawing and editing tools (except the Freehand tool) are influenced by the grid. When you click or drag near a grid line or intersection, the cursor snaps to the grid. The snap is stronger at grid intersections than along grid lines.

Expression also provides a snap to node constraint by using **View menu▸ Snap to Nodes**. When you click or drag near an existing node (point), the cursor snaps to the node.

## The Status Bar

At the lower left corner of the Expression window is the Status Bar. The Status Bar displays information regarding the Snap To Grid or Snap to Node functions and the size of the Grid as set in the Preferences dialog View tab.

Choose **Window menu▸ Toolbars: Status** to toggle on/off the Status Bar at the bottom of the main Expression window.

The Expression status bar.

## Multiple Windows

You may have multiple document windows open while you are working in Expression. The Window menu provides a list of currently open Expression documents. If you have multiple documents open, choose the name of a document from the Window menu to bring the document to the foreground and make it the active document.

The Window menu also allows you to control how multiple windows are displayed. These functions are only available on the Windows platform.

Choose **Window menu▸ Cascade** to arrange open windows starting in the upper left corner with each additional window positioned slightly to the right and lower so you can see the title bar of each window.

Choose **Window menu▸ Tile** to arrange open windows as tiles.

Choose **Window menu▸ Arrange Icons** to arrange open minimized windows along the bottom of the screen.

# Navigating Your Document

You can navigate through a document or image by changing the level of magnification (zooming in or out), scrolling to a different part of the image, or rotating the page. By navigation, we mean moving around a document, changing views, or moving the page.

## Zooming In and Out

By default Expression opens a document at 100% view, but you can change the view to suit your needs. The Zoom Ratio box in the lower left corner of the document displays the current zoom ratio. Click-hold to choose another zoom ratio.

The View menu also offers you a variety of ways of changing the zoom ratio:

**Zoom in** Enlarges the document window to the next largest zoom ratio.

**Zoom out** Reduces the document window to the next smallest zoom ratio.

**Zoom on Selection** Magnifies and centers the current selection to fill the document window.

**View All** Reduces the page to view all objects in the document window.

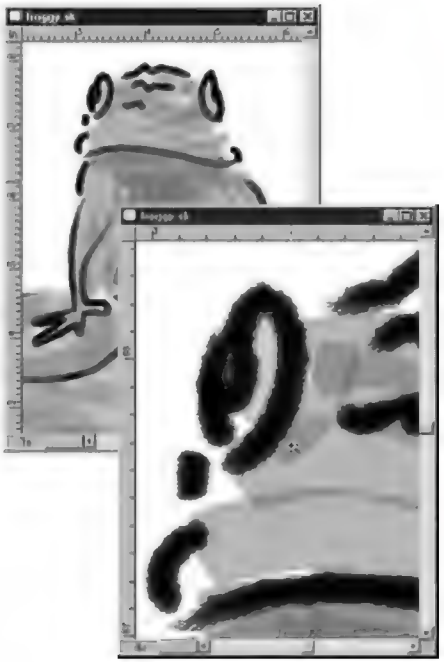
**Actual Size** Enlarges or reduces the document window to 100% size.

**Center View** Centers the printable page in the document window.

You can also zoom in and out with the Magnifier tool.

**To zoom in:**

1. Choose the **Magnifier** tool from the **Tools** toolbar. The cursor changes to a magnifier. The plus sign (+) on the magnifier indicates that you are increasing magnification—zooming in.



Click with the Magnifier to view an image close-up.

2. Click the image. With each click, the image is magnified. The ratio of the magnification appears in the Status Bar at the bottom of the window.

### To zoom out:

1. Choose the **Magnifier** tool from the **Tools** toolbar. The cursor changes to a magnifier.
2. Hold down the **Option/Alt** key. The plus sign (+) on the Magnifier tool turns to a minus sign (-).
3. While holding down the **Option/Alt** key, click the image. The magnification ratio appears in the Status Bar at the bottom of the window.

### To magnify a specific area:

1. Choose the **Magnifier** tool from the Tools toolbar. Move the cursor to the drawing window and drag a rectangle around the area you want to magnify.

   The area inside the rectangle is magnified to the closest magnification level that fills the screen.

## Using the Grabber Tool

The Grabber tool gives you a quick way to scroll an image.

### To scroll by using the Grabber tool:

1. Choose the **Grabber** tool from the Tools toolbar. The cursor changes to the hand cursor.
2. Drag in the document window to pan or move your image.

To use the **Grabber** tool while another tool is selected, hold down the **Spacebar**.

## Changing Your View

In addition to controlling the Grid, Rulers, Snap To and Zoom Ratio the View menu controls the display quality for your paths.

**Path** Shows the path only.

The Path view displays only the paths.

**Wireframe** Shows the path plus an outline of any stroke applied to the path.

The Wireframe view displays the path plus outlines representing strokes.

**Preview** Shows the path plus the stroke and/or fill as applied to the path.

The Preview view displays the document as it would be printed.

## Creating a New View

The View menu can also be used to open up an additional window showing a different view of the document you are currently editing. This can be very useful when working on a complex image, as you can set each view window to its own zoom ratio.

**To open an additional view:**

1. Choose **View menu▸ New View**. An additional view window displays the name of the current document in the title bar, followed by a number defining which view it represents. Actions performed in one view window are immediately shown in any additional views of the same document.

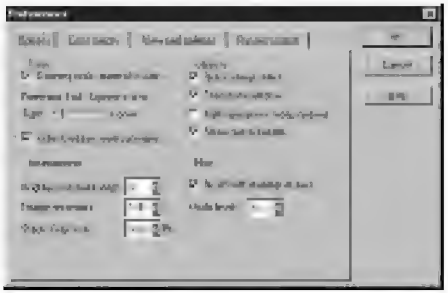
New View displays an additional window for working on the same document.

## Setting Preferences

Expression's preferences enable you to customize Expression to the way you like to work. There are four tabs to take you to the specific areas you can customize.

**To set Expression Preferences:**

1. Choose **File menu▸ Preferences**. The Preferences dialog appears.



Preferences dialog.

2. Click the tab for the area you would like to edit, then make your changes.

3. Click **OK**.

### Options Tab

This tab controls settings for various options including Tools, Objects, Arrangement and Miscellaneous.

#### Tools

**Drawing tools: append to path** When this option is enabled (the default), all drawing tools (except the Freehand tool) can be used to append points to an existing path. Just position the cursor over the endpoint of an existing path before starting to draw. A tilde (~) is added to the cursor, indicating that it is ready to append points to the existing path.

When this option is disabled, none of the drawing tools append points to existing paths. Clicking on the endpoint of an existing path creates a new path starting at that point. By holding down the **Shift** key, you can force any drawing tool to append points to an existing path.

**Freehand Tool: Tightness of fit** Controls the precision with which the path follows the movement of the mouse or stylus pen when using the Freehand tool. If the setting is too high every minor waver is captured, possibly resulting in a line that is quite irregular. If the setting is too low the resulting path may be less precise than you intended.

In most cases the default setting should give you acceptable results.

**Color Dropper: resets primaries** This preference determines what happens when you use the Color Dropper tool to drop color onto an object whose colors have already been adjusted using the Foreground/Background color swatches or the Colorize controls.

When this preference is enabled (the default), using the color dropper automatically resets the Colorize or Foreground/Background information. This ensures that the color you're dropping is the color you actually see on the object.

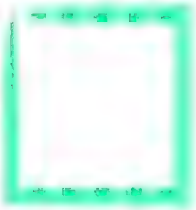
When the preference is disabled, the color you drop may not be the color you see on the object. For example, suppose you have a grayscale stroke with the foreground color set to red, so your entire stroke appears in reds of varying shades. Then suppose you use the color dropper to drop black into an area of your stroke which is currently medium red. The spot where you drop the color will not appear black, but instead will appear full red. This is because the red foreground color transforms all black regions within the stroke into red.

For more information regarding colors, see ➤Chapter 4, "Using Color."

#### Objects

**Quick (area) select** Determines whether clicking on a fill area selects an object or whether you need to click on the path itself in order to select an object.

**Transform patterns** Controls the way a pattern is handled when an object containing a pattern is transformed (rotated, skewed, scaled). When this option is enabled, the pattern is applied to the object before the transformation and therefore transforms with the object. When this option is disabled the object is transformed and then the pattern is reapplied and not affected by the transformation.

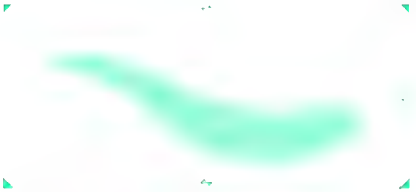


Original object with pattern before transform.

Object after skew with Transform patterns ON, then OFF.

**Path operations: keep originals** Toggles on/off to keep or discard original objects after performing a Boolean operation. For information regarding Boolean operations, see ➤"Using Boolean Operations" in Chapter 3, "Creating Paths."

**Show resize handles** Toggles on/off the on-screen resize handles that appear around selected objects. When on (default), resize handles are displayed at the corners of the bounding box and the transform handles appear on the top, bottom and sides.



Object selected with resize handles.

When off, the path itself appears in color but no handles appear.



Object selected without resize handles.

### Arrangement

**Angular constraint steps** Sets the angle of constraint when holding down the **Shift** key while moving or rotating an object.

**Nudge increment** Sets the increment applied when you use the keyboard arrow keys to move an object.

**Stack: Gap Size** Sets the size of the gap (in points) between objects when using the Stack function.

### Miscellaneous

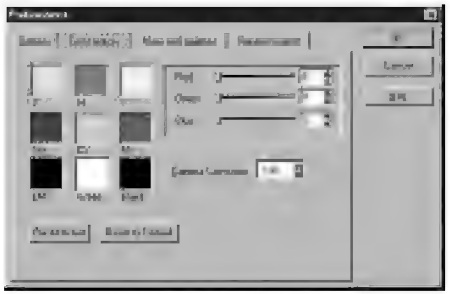
**No fill with Skeletal strokes** When this option is enabled, choosing a Skeletal Stroke automatically removes any fill which has been applied. If you want to fill an object which has a Skeletal Stroke applied, you can choose the stroke first, then apply a fill.

When this option is disabled, the Skeletal Stroke uses whatever fill is active in the Paint Style palette. In most cases you probably do not want a fill with a Skeletal Stroke.

**Undo levels** Sets number of Undo levels. Higher levels of Undo use up more RAM.

## Color Match Tab

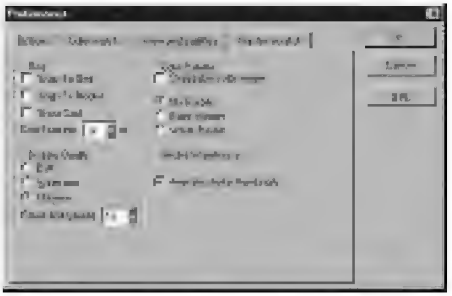
Use the Color Match tab to calibrate your monitor for the best match possible when printing to a color printer. For more information on Color Match, see ➤"Setting Color Calibration" in Chapter 4, "Using Color."



Preferences dialog, Color Match tab.

## View and Palettes Tab

This tab provides you options for the view displayed in your workspace and options for some of the palettes. These settings are applied when creating a new document.



Preferences dialog, View and palettes tab.

### Grid

**Snap to Grid** This option determines whether or not the Snap to Grid function is enabled when a new document is created.

**Snap to Nodes** When this function is enabled Expression automatically moves to the closest node on a selected path when you perform any action that applies to a node.

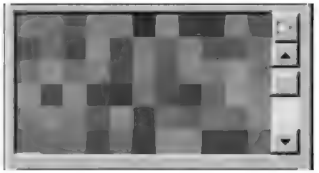
**Show Grid** Toggles on/off a non-printing grid that is useful for precise placement of points and objects. This option determines whether or not the Show Grid function is enabled when a new document is created.

**Grid Spacing** Sets the spacing/size for the grid in the workspace.

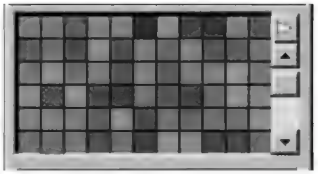
### Color Palette

**Draggable Color Wheel** When this option is enabled, drag to rotate the Color Wheel. The color touching the point of the Value Picker triangle or diamond is the active color. When this option is disabled the Color Wheel is stationary and you click the desired color to make it active. The Value Picker reflects the current color selection.

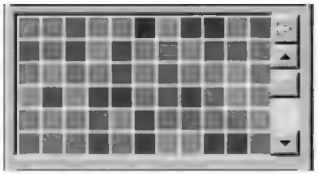
**Color Palette Border** Sets the display for the Color palette with no border between colors in the Color Table, with black border between colors or with white border between colors. To display the Color Table in the Color palette you must expand the Color palette. For more information on expanding the color palette, see ➤"Color Palette," earlier in this chapter.



No border



Black border



White border

### Display Quality

**Display Quality** Determines the view Expression defaults to when a new document is created. You can choose from Path, Wireframe or Preview views. For additional information regarding display quality, see ➤"Changing Your View," earlier in this chapter.

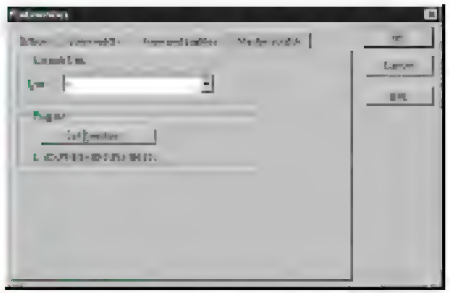
**Greek limit (pts)** Sets the minimum size for a font to be displayed on screen. Fonts smaller than this size display as gray lines rather than actual text.

### Stroke Warehouse

**Animated stroke thumbnails** Toggles on/off the animation of stroke thumbnails in the Stroke Warehouse list. When this option is enabled, the Stroke Warehouse palette displays the currently selected stroke as an animation demonstrating how the stroke may appear when applied to a path. This is particularly useful for Multi-view strokes. For more information regarding Multi-view strokes, see ➤"Creating Multi-view Strokes" in Chapter 5, "Applying Strokes and Fills."

## Raster/Scratch Tab

This tab provides you the option for selecting a scratch disk and plug-in directory.



Preferences dialog, Raster/Scratch tab.

### Scratch Disk

**Use** Select a disk that has plenty of free space. The scratch disk is used only when rasterizing. It should only be necessary when you do not have enough RAM to keep the entire rasterized image in memory.

### Plug-Ins

**Set Directory** The only plug-ins Expression uses are file format input/output filters. By default, Expression looks for these plug-ins in its own plug-ins directory. The only time it is necessary to change this directory is if you have other PhotoShop-compatible file format filters in another directory and want to use those instead of the filters supplied with Expression.

# Opening and Saving Documents

Expression can open and use most vector-based artwork. It can also save in most popular formats, both vector, such as Adobe Illustrator or CorelDRAW! and bitmap such as Adobe Photoshop, TIFF (TIF) and BMP.

## Vector or Bitmap

Computer graphics are either vector or bitmap. A vector graphic is defined by placing nodes (or vector points), then using a mathematical formula to describe the line that connects the points. Vector artwork is also referred to as outline.

The advantage of vector art is that it is resolution independent and can easily be resized at any time, still printing out beautifully on a Postscript printer. Drawing packages such as Adobe Illustrator, Macromedia FreeHand and CorelDRAW! are examples of vector-based graphics programs.

Vector images at different resolutions.

Bitmap images at different resolutions.

Bitmap artwork is defined pixel by pixel or dot by dot. Bitmaps have no outline, therefore, resizing such an image may result in stairstepped edges.

Bitmaps have a real advantage when creating a textured look or for photographic quality images. Bitmaps can show subtle color changes and blends such as shadows. Graphics created by scanning, or by paint programs such as Fractal Design Painter and Adobe Photoshop, are examples of bitmap artwork.

You can export artwork from Expression in either vector or bitmap format. If you want to place or edit your image in another application, while still retaining resolution independence, you should choose a vector format. If you want to refine it or generate color separations in a painting or image editing application, you should choose a bitmap format.

If your image contains transparent objects, you will need to save it in bitmap format (rasterized), since other vector-based applications and printers do not support transparency.

Always save a copy of your work in the Expression format (*.xpr). This will save your art in a vector format.

## Setting Bitmap Resolution

When you save a file as a bitmap you can select the size and resolution of the file. Multi-view strokes saved as movies also have the same options.

Resolution, in general, refers to the number of dots per inch (dpi) that make up an image. When you select a resolution, there are three kinds of resolution to consider:

- The monitor's resolution, measured in pixels. Expression is preset to 72 pixels per inch. The resolution of your monitor may be different.
- The document's resolution. You can assign the resolution when an image is scanned or an image is rasterized (saved as a bitmap) in Expression.
- The output device's resolution, measured in dpi. Output device resolutions vary depending on the printer.

The default resolution setting is screen resolution or 72 dpi. The image on-screen at 100% is the size it will be when it's output. On most printers, 72 dpi bitmap renders a coarse image, so you may want to choose a higher resolution value.

If you are using a personal laser printer, set your bitmap Width and Height in inches, centimeters, points or picas. Set resolution to the dpi your printer supports. Your file

will be output correctly at the best resolution for your laser printer and at the proper size.

If you are using a commercial printer or a more sophisticated output device, the dimensions should always be set to the actual size it will appear in the printed piece. It's a good idea to check with your service bureau if you have questions about output device resolution.

## Opening Existing Documents

Artwork created in other software applications can be brought into Expression for continued editing. You might use imported artwork as the basis for a path, a Skeletal Stroke or a Pattern. You can use Expression to work with images already existing in the following formats:

### Vector

- Adobe Illustrator 5.5 and earlier (*.ai)
- CorelDRAW! 3, 4, 5 and 6 (*.cdr)
- Computer Graphics Metafile (Windows) (*.cgm)
- Vector PICT (Mac)
- WMF (Windows)
- Fractal Design Expression (*.xpr)

**To open or import an existing image:**

1. Choose **File menu▸ Open**. The standard Open dialog appears.

The Open dialog.

2. Select the format or file type so you can limit the available files or select **All Files**.

3. Select the file you want to open then click **Open**. Expression opens a new document with the selected artwork.

### Opening Clipboard Images

You can also use the Clipboard to bring artwork from another application into Expression. Expression supports the following formats through the Clipboard:

- Vector PICT (Macintosh)
- WMF (Windows)
- Fractal Design Expression
- Text

**To open or import an existing image through the Clipboard:**

1. Copy the artwork from its current file by selecting it and using the **Edit menu▸ Copy** or **Command/Ctrl+C**. This places a copy of the image into the Clipboard.
2. Paste the Clipboard image into the Expression document by using the **Edit menu▸ Paste** function or **Command/Ctrl+V**.

## Saving Documents

You can save your Expression artwork in several different ways:

- Expression format for use in Expression in a future session.
- Vector artwork for placement into a vector-based application such as Adobe Illustrator or CorelDRAW!.
- Bitmap artwork for placement into a bitmap application such as Fractal Design Painter or Adobe Photoshop.
- Movie format (Multi-view strokes only) for viewing an animation.

It is a good idea to always save your document in the Expression format (*.xpr). If you only save your art in a bitmap format, it will be harder for you to make changes to individual paths.

### Saving as Vector

Your Expression artwork can be saved in the following vector-based formats:

- Fractal Design Expression
- Adobe Illustrator (*.ai)
- Computer Graphics Metafile (Windows) (*.cgm)
- CorelDRAW! Exchange (*.cmx)
- Vector-based PICT (Macintosh)
- WMF (Windows)
- EPS (This type of file stores only printer information. Expression EPS files cannot be edited.)

**To save as vector:**

1. Choose **File menu▸ Save**.
2. If this is the first time you are saving the document you are prompted to select a file format, name and location.

If the file has been saved previously, choosing **File menu▸ Save** replaces the last saved version with the current version.

**To save and rename a document or to save and select a different format:**

1. Choose **File menu▸ Save As**.
2. Select the file format you prefer.
3. Assign a name to your file and select a directory in which to save it.
4. Click **Save**.

### Saving as Bitmap

Expression allows you to save your artwork in the following bitmap formats:

- Adobe Photoshop 2.5
- TIFF/TIF
- Targa (Windows)
- PCX (Windows)
- PhotoPaint (Windows)
- Bitmap PICT (Macintosh)
- BMP
- JPEG (without LZW compression)

### Anti-Aliasing

Anti-aliasing is a process used to make color images appear smoother when the image includes curved and diagonal areas with high contrast. Without anti-aliasing the curves and diagonal lines may appear to be stairstepped.

With and without anti-aliasing

With the Anti-Alias option enabled, Expression modifies areas with stairstepping, changing some pixels to intermediate colors. For example, if your image is a red and yellow beachball on a blue background, individual pixels along the edge of the ball are changed to shades of orange and green, fooling the human eye into "seeing" a smoother curve.

Unless you are working on a project which specifically requires that images not be anti-aliased, such as multimedia cast members, there is no reason to disable the Anti-aliasing option. Anti-aliasing does not significantly increase the time required to rasterize an image.

**To save as bitmap:**

1. Choose **File menu▸ Save Bitmap**.
2. Select or deselect **Keep Proportions**.
3. Set **Width** and **Height** in inches, centimeters or points.
4. Set the **Resolution** of the bitmap. For more information on setting resolution, see ➤"Setting Bitmap Resolution," earlier in this chapter.
5. Select or deselect **Anti-Alias** as needed. For information on anti-aliasing, see the introduction to this section.
6. Click **OK**.
7. Select a directory in which to save the bitmap file. Set the file format and name the bitmap file.
8. Click **Save**. Converting vector artwork into raster artwork will take some time. Expression displays a progression bar to let you know how much of the conversion has been completed.

   High-resolution bitmap images require large amounts of disk space. If you have trouble saving a large bitmap, make sure you have sufficient free space on your hard disk.

## Saving Multi-view Strokes As Movies

A Multi-view stroke can be rasterized, then saved as an animation or as a series of bitmapped still images. The animation can then be used in another application as a movie. For more information on Multi-view strokes, see ➤Chapter 5, "Applying Strokes and Fills."

### Multi-view Strokes

When rasterizing Multi-view strokes the goal is to produce a sequence of bitmaps to make up an animation. To achieve this, more parameters are required. Based on the number of frames per second (fps) and the duration of the movie, Expression can rasterize the appropriate number of bitmaps.

You must be in the Stroke Definition window and have open a Skeletal Stroke with two or more views.

Movie files can take up several megabytes of hard drive space, since they are essentially sequences of many images (potentially hundreds). The following factors contribute to the size of a movie: frame size (height x width), frame rate (frames per second), duration (in seconds), and compression settings.

Not only do large movies take up a lot of space on your hard disk; they also tend to play very sluggishly on all but the fastest computers. You should experiment with the variables listed above to determine which settings produce movies that play smoothly on your computer and take up reasonable amounts of storage space. Below are some general guidelines which may help you. For more detailed information, consult the documentation that came with your multimedia authoring or video production software or hardware.

For video to be exported to tape and played back on television: 640 x 480 pixels, 30 fps, save as sequenced images, QuickTime, or AVI with no compression (most video production software and hardware solutions provide their own compression).

For multimedia productions to be played on a typical desktop computer: 320x240 pixels, 15 fps, save as QuickTime or AVI with moderate compression.

For web animation: Lower resolution, a small, fixed number of frames, save as sequenced JPEG images with compression. If you require GIF images, you will need to convert to GIF in another application.

**To save an animation:**

1. Open a Multi-view stroke by double-clicking it in the **Stroke Warehouse** palette. The Stroke Definition window appears.
2. Choose **File menu▸ Save Stroke as Movie**.
3. Select or deselect **Keep Proportions**.
4. Set **Width** and **Height** in inches, centimeters or points.
5. Set the **Resolution** of the bitmap. For information on setting resolution, see the guidelines in the introduction to this section.
6. Select or deselect **Anti-Alias**. For information on anti-aliasing, see ➤"Anti-Aliasing" earlier in this chapter.
7. Set the **Movie Length** and **Frames per Second**.
8. Click **OK**.
9. Select file destination and name the file.
10. Click the **Options** button to set compression settings, if desired.
11. Click **Save**. The status area indicates progress as the movie is rasterized.

A movie player is required to view your movie. Macintosh documents are saved as QuickTime movies. Windows documents are saved as AVI movies.

## Undoing Operations

Multiple Undo allows you to undo and redo actions within Expression. This gives you the freedom to experiment freely without fear of making mistakes.

The number of undos is set in the Preferences found under **File menu▸ Preferences▸ Options**. The default setting is ten levels. For more information on setting your preferences, see ➤"Options Tab" earlier in this chapter.

**To Undo an action:**

1. Choose **Edit menu▸ Undo** or **Command/Ctrl+Z**.

**To Redo an action:**

1. Choose **Edit menu▸ Redo** or **Command/Ctrl+Y**.

   It is a good habit to save your file frequently so you can choose **File menu▸ Revert to Saved** if you don't like the changes.

## Reverting to the Last Saved Version

Occasionally you will find it useful to revert to the last saved version of your file. This is especially useful if you have experimented with changes but decide you don't want to keep the changes after all. You can also use the Undo/Redo function but there are some functions which can not be undone. If you save your file just before such an action you can revert to the last version saved if you decide you don't like the changes.

**To revert to last saved version:**

1. Choose **File menu▸ Revert to Saved**. Expression asks you to confirm that you want to revert to the last saved file.

2. Click **Revert** and Expression replaces the document with the last version saved on disk.

# Closing Documents and Quitting

You can quit and close Expression documents the way you do in other programs.

**To end a work session:**

1. Close a document by choosing **File menu▸ Close** or **Command/Ctrl+W** or clicking the close box in the upper left corner of the document (Macintosh) or the upper right corner of the document (Windows).

   If you have any unsaved changes, a dialog asks if you want to save changes. Click **Yes** to save your changes or **No** to discard them.

2. Exit Expression by choosing **File menu▸ Quit** (Macintosh) or **File menu▸ Exit** (Windows) or **Command/Ctrl+Q**.

# 2

# Tutorial

The best way to learn about Expression is to do this tutorial. Like all artist's tools, Expression invites experimentation, so feel free to play around as you learn.

## About This Tutorial

We designed this tutorial to introduce you to most of the techniques used when creating artwork with Expression. We encourage you to refer to other chapters in the Expression User Guide for more in-depth information about concepts introduced in this exercise. The **Expression Creative Techniques** guide offers other exciting techniques for you to investigate. Have fun expressing yourself!

## Overview of the Sample Project

This sample project guides you through creating a poster, while developing many of the important concepts of the application. At any point, if you want more information on a subject, look at the related section of the manual before continuing with the project.

The finished image.

Have the Expression Quick Reference Card handy as you go through this Tutorial. It helps you quickly identify tools and buttons that are called for as you become acquainted with Expression.

### The Tutorial Files

Before you start the Tutorial, check to see that the Tutorial files are on your hard drive. If you did a standard install, the files will be there unless they were deleted. You can always do a custom install from your Expression CD if you need to add the Tutorial files to your hard drive.

These three lessons are planned so they should take 20-30 minutes each to complete. If you lose your way or want to start in the middle because you have been interrupted, we have included copies of the Tutorial file as it should look at the beginning of each lesson.

### Setting up Your Workspace

Launch Expression and take a look around the Expression workspace. You see toolbars along the top and left side of the screen as well as several palettes on the right. For this exercise you need the following palettes and toolbars:

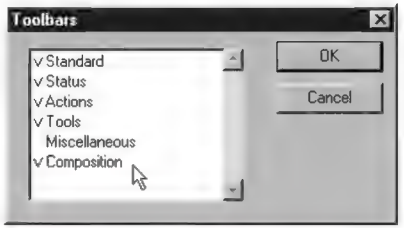
- Paint Style palette
- Stroke Warehouse palette

- Color palette
- Layers palette
- Standard toolbar
- Actions toolbar
- Tools toolbar
- Composition toolbar

First, set up your workspace to be more efficient.

### To control toolbars:

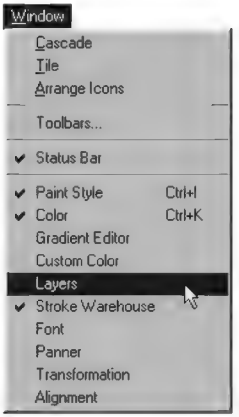
If any of these toolbars are missing, or if you wish to close some you do not need, you may toggle them on/off by choosing **Window▸ Toolbars** then select or deselect those you want.




The Toolbars dialog.

### To control palettes:

If any palettes are missing you can open them by choosing the Window menu. Then highlight the name of the palette you need. Palettes you don't need can be closed by clicking the close box in the upper left corner of the palette title bar (Macintosh) or the upper right corner of the palette title bar (Windows).




The Window menu.

## Enjoy it!

Expression is going to become an important part of your graphics toolkit. The time you spend now, learning to use Expression is going to pay off as you learn to freely express yourself! As you create this sample project, your own unique style comes through in your first Expression image.

As you experiment, remember you can choose **Edit menu▸ Undo** or **Command/Ctrl+Z** to undo most actions in Expression.

# Lesson 1: The Dragonfly

In this lesson you will learn about:

- Opening a document
- Selecting objects
- Applying a Skeletal Stroke
- Editing strokes
- Adding color
- Saving a file

Expression can open most vector graphics files. This lesson starts with a file that was created in Adobe Illustrator™.

**To open the Adobe Illustrator document:**

1. Choose **File menu▸ Open**.
2. Select the file **tutorial.ai** from the Tutorial directory. If you do not see the file, make sure that the Illustrator format or **All Files** is chosen from the **File Type** menu in the **Open** dialog.
3. Click **OK**.

This file includes an outline of a dragonfly. The first thing to do is enhance the dragonfly by applying a Skeletal Stroke to it. Before you can apply a stroke, you must select the paths or objects you want to edit.

The dragonfly imported from Adobe Illustrator.

## Selecting Objects

Expression provides several selection tools plus the Composition toolbar for selecting objects in your document.

The **Selection tools** include:

**Object Selection**

Selects objects or groups of objects.

**Group Selection**

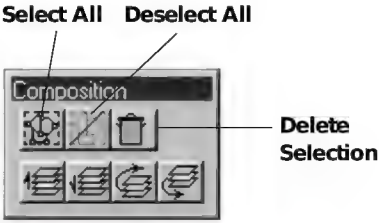
Selects individual object within a group.

**Node Selection**

Selects points of a path.

To use any of the selection tools, choose the tool then click an object or drag a marquee to select multiple objects. To add additional objects to the selection, hold down the **Shift** key and click.

The **Composition** toolbar allows you to select or deselect all objects with a single click. You can also use it to delete a selection and change the order of objects in a particular layer.

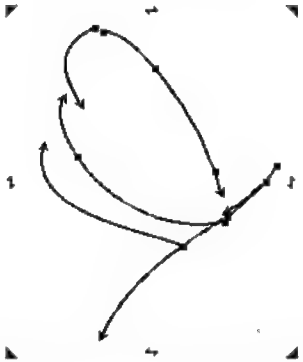



The Composition toolbar.

**To select all:**

1. Choose the **Select All** button from the **Composition** toolbar. The selected paths are now displayed in color with individual nodes (or vector points) visible. The selection is enclosed in a

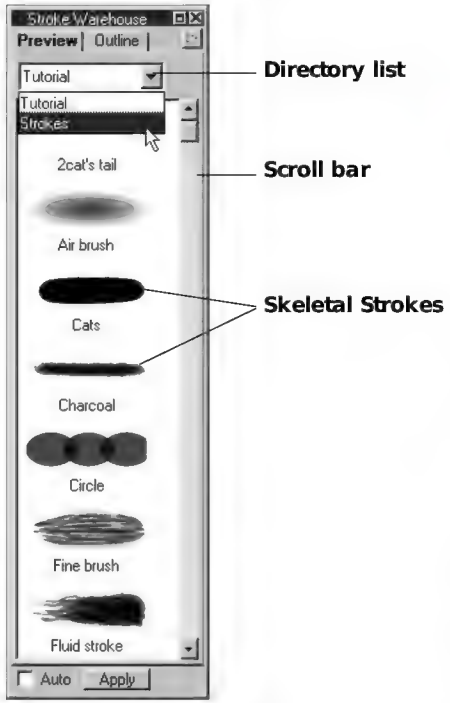
bounding box and the corners of the bounding box, the Resize Handles, are represented by triangles.



Dragonfly with all paths selected.

## Applying a Skeletal Stroke

Now that you have the dragonfly paths selected, you can apply a Skeletal Stroke. Expression includes a variety of Skeletal Strokes stored in the Stroke Warehouse palette.



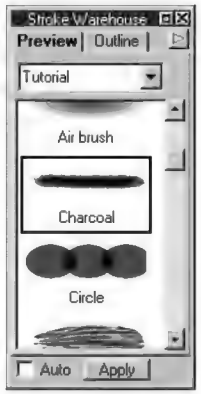

The Stroke Warehouse palette.

Use the scroll bar to view additional strokes or folders of strokes. Double-click a folder to open it and view the strokes in that folder. Use the directory drop down list at the top of the Stroke Warehouse palette to select the main stroke directory or navigate up through nested folders.

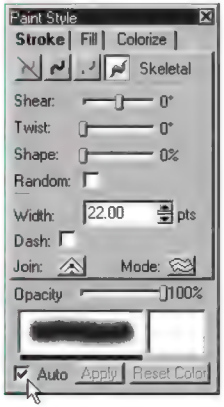
When you select a new Skeletal Stroke, several things happen: the stroke is applied to the selection and the Paint Style palette changes to display the currently active stroke.

### To apply a stroke:

1. Double-click the **Tutorial** folder in the **Stroke Warehouse** palette to display the strokes you need for this exercise.
2. Click any stroke in the list. We chose the Charcoal stroke.
3. Click **Apply**.




The Stroke Warehouse with the Tutorial folder open, Charcoal stroke selected.




The Paint Style palette showing the Charcoal stroke and the Auto option enabled.

The selected stroke is animated to give you an idea of how the stroke appears when applied to paths of different lengths. This is especially useful for Multi-view strokes, covered near the end of this tutorial. If you want, you can use the Preferences to turn off this animation in the Stroke Warehouse palette.

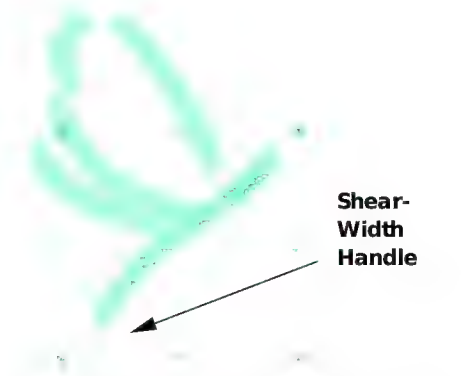
➔ **Note:** Both the Paint Style palette and the Stroke Warehouse palette include an auto apply function. When **Auto** is enabled all changes to the palettes automatically affect the selected objects. By default this is active. However, for the purpose of this manual, we always tell you to click Apply. Just ignore that direction if you choose to work with the **Auto** option active.

Take some time to experiment with different Skeletal Strokes.

After you have tried a variety of strokes you are ready for the next step. Don't worry about which strokes you have currently applied. We will instruct you on how to enhance each part of your dragonfly to create the Tutorial scene while learning various techniques of Expression.

### To apply the Circle stoke to the dragonfly body:

1. Click an empty space to deselect everything or click the **Deselect All** button from the **Composition** toolbar.
2. Using the **Object Selection** tool from the **Tools** toolbar, click to select the dragonfly body.
3. Select the stroke named **Circle** from the **Tutorial** folder in the **Stroke Warehouse** palette. The Circle stroke is constructed from overlapping circles with some transparency.




Select the body path and apply the Circle stroke.

4. Click **Apply**.

## Editing the Stroke Instance

The stroke applied to the dragonfly body is not the width we want.

### To change the width and shear of the stroke:

1. Notice the **Shear/Width** handle at the lower end of the path. Use the Shear/Width handle to control the width of the stroke and to shear or slant the circles.

Pull the handle straight in or out to change the width of the stroke.

2. Pull the handle straight out or in (perpendicular to the path) to control the width of the stroke. Drag the Shear/Width handle for the body to make it a pleasing width as shown above.

3. Pull the handle at an angle to shear or slant the stroke, making the circles appear slightly slanted.

4. Click in an empty area of the document or click the **Deselect All** button.

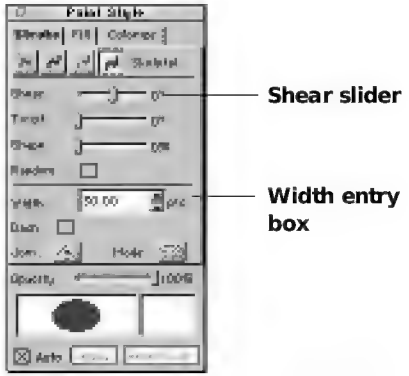
### To control width and shear using the Paint Style palette sliders:

1. Using the **Object Selection** tool, select the head.

2. Apply the **Circle** Skeletal Stroke to the head also. You need to enlarge the head.

3. This time, use the **Width** setting in the Paint Style palette to change the size of the head. Type in a higher number or drag the up arrow by the Width box until the head is the size you want.

4. You can also use the **Shear** slider in the Paint Style palette to shear or skew the head.



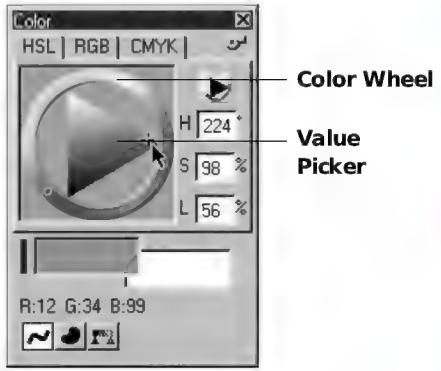

Paint Style palette, Width entry box and Shear slider.

## Adding Color

Next, you begin to enhance the dragonfly wings.

Use Expression's Color palette to add color to your artwork. The Color palette includes the Color Wheel, for selecting a color range and the Value Picker, for selecting a particular color within the selected range. A key at the upper right corner of the palette opens and closes the Color Table display. For now, leave the Color Table display closed.

The first step to coloring your dragonfly wings is to color them yellow.




The Color palette.

### To select a color:

1. Using the **Object Selection** tool from the **Tools** toolbar, drag a marquee to select the four paths that make up the wings.

Drag a marquee to select all four pieces of the wings.

2. Click the preferred color, yellow, on the **Color Wheel** from the **Color Palette**. The **Value Picker** changes to display the range of yellows available.

3. Drag in the **Value Picker**. As you move the cursor, the color swatch at the bottom of the **Color** palette changes to display the current selection. When you see the color you prefer, release the mouse button.

4. Click **Apply** in the Paint Style palette to apply that color to your selection.

## Changing the Stroke and Color

Use the skills you learned above to change the stroke on the topmost wing path as follows:

### To change the stroke and color on the top wing:

1. Click an empty space to deselect everything or click the **Deselect All** button from the **Composition** toolbar.

2. Click to select the topmost wing path.

Select the wing path.

3. Apply the stroke named **Air Brush**.

4. Edit the color to a shade of purple.

Apply the Air Brush stroke and change the color.

5. In the **Paint Style** palette, set the stroke width to 20 pts.

6. Click **Apply**.

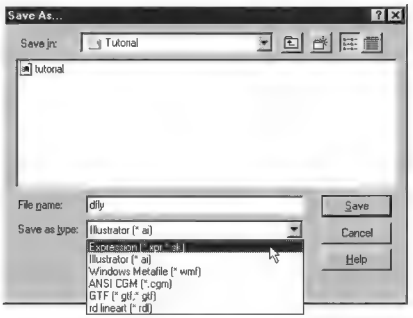
## Saving a File

Before moving on, you need to save your file to the hard drive. Frequently saving your image as you work is a good habit to develop.

### To save:

1. Choose **File menu▸ Save As**.

2 Choose File type: **Expression**




Saving the file.

3 Name the file **dfly**.

4 Select the **Tutorial** directory as the location to save the file.

5 Click **Save**.

At this point you can continue with the next lesson or end your Expression work session.

# Lesson 2: Adding More Detail to the Dragonfly

In this lesson you will learn about:

- Selecting stroke and fill attributes
- Drawing with the Classic drawing tools
- Using Natural-Media strokes
- Selecting by stroke
- Changing the stack order
- Layering
- Using Supplemental drawing tools

Open the file you created in Lesson 1 (**dfly**) or open the file named **lesson2.xpr**.

One of the advantages of using Expression is that you can quickly change the look of your artwork by applying a different stroke and fill to any path.

To add more interest to the dragonfly wings you now fill them with color. You are going to use the Pen tool to draw shapes. The shapes have no stroke, because you don't want a hard edge on the wings. The fill is a somewhat transparent light blue color.

## Setting Attributes for Your Path

Settings in the Paint Style palette determine the attributes for the next path you draw. Before you draw a path, be sure the Paint Style palette is set to the stroke and fill you want to use.

### To set stroke and fill attributes:

1 Click the **Deselect All** button from the Composition toolbar.

2 Click the **Stroke** tab in the **Paint Style** palette.

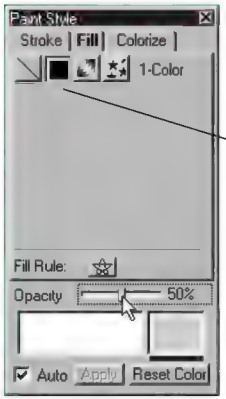
3 Click the **None** icon to set the stroke to None.

Set the stroke type to None.

4 Click the **Fill** tab.

5 Click the **Color** icon to set the fill to a solid color.

6. Use the skills you developed in Lesson 1 to select a light blue color. If you need a refresher on choosing colors, see ➤"Adding Color," earlier in this chapter.




Set the fill to Color and the Opacity to 50%.

7. Expression allows you to control transparency or opacity with the **Opacity** slider in the **Paint Style** palette. Make the dragonfly wings transparent by setting the Opacity slider to 50%.

## Drawing Paths

Expression includes a variety of drawing tools. The Classic (two most common) drawing tools, Freehand and Pen, are together on the toolbar. The Freehand tool creates a path as you move the cursor with the button held down. The Pen creates a Bézier path by placing points (nodes). The lines connecting the points are controlled by tangent handles. For more information on the drawing tools, see ➤Chapter 3, "Creating Paths."

### To create a shape with the Pen tool:

1. Click the **Classic Drawing Tools** icon in the **Tools** toolbar and choose the **Pen** tool.

Select the Pen tool.

2. Click and click-drag to draw a shape filling the inside of the top wing. To end the path click on the starting point or press the **Return/Enter** key.

Fill the inside top of the wing.

3. Use the **Node Selection** tool from the Tools toolbar to move nodes or tangent handles as needed.

Fill the second wing. Notice transparency buildup where the wings overlap.

4. Use the same technique to fill the other wing segment. Be sure to stay inside the wing outlines, because you will need to select the outline later in this tutorial.

   Notice that the overlapped area shows a different shade of blue, created from the transparent layers. Expression makes it very easy for you to add this kind of Natural-Media look.

Fill the other wings.

## Using a Natural-Media Stroke

Now you are ready to add some texture to the dragonfly wings.

### To draw with Natural-Media stroke:

1. Choose the **Deselect All** button from the **Composition** toolbar.

2. Select the stroke named **Fine Brush**. This Natural-Media stroke mimics a paint brush. It is composed of two colors which you can control by using the Color palette.

### To set color for a multi-color stroke:

1. Click the **Stroke Color** button in the Color palette, to ensure that the changes you make now apply to the stroke.

Select the Stroke Color button.

2. The Color palette displays two rectangles representing the foreground (left rectangle) and background (right rectangle) colors. Click the foreground (left) color and select a bright blue. This is the predominant color for your stroke.

3. Click the background (right) rectangle, then select a deeper blue color. This is the secondary color for your stroke.

4. Using the **Freehand** tool from the **Tools** toolbar, paint over the wings to add the new textured stroke.

Select the Freehand tool.

Paint over the wings.

## Selecting by Stroke

Expression makes it easy for you to change parts of an image that share attributes. This can be a real help when editing a complex image. For this exercise we are going to select paths that have the same stroke applied to them. In another situation you could select paths that have the same color, the same fill or a combination of these attributes, such as all blue paths with a specific stroke.

### To select by stroke:

1. Select a sample path, in this case, the lower wing outline path.

2. Choose **Edit menu▸ Select By**. The **Select By** dialog appears.

Select the lower wing path.

3. Select **Same Stroke**.

In the Select By dialog select Same Stroke.

4. Click **OK**. All three lower wing outline paths are now selected. The topmost wing outline path is not selected, since it has a different stroke applied to it.

Using Select By, all paths with the same stroke are selected.

Now that the similar strokes are selected you can replace their current Skeletal Stroke with a different stroke by selecting a new stroke in the Stroke Warehouse palette.

5. Select the stroke named **Silk**. The Silk stroke is applied to all three paths.

## Changing the Stack Order

When two or more objects are placed at the same location on the screen Expression has to decide which one to paint last. The object painted last appears to be on the top of the stacked objects. If you don't change the stack order Expression paints objects in the order they were created.

In this case, the wing outlines are on the bottom of the stack, since they were drawn first. Expression makes it easy for you to move an object up or down in the stack or send it to the top or bottom.

### To change stack order:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the objects you wish to bring forward. (If you have not clicked elsewhere the wing outlines are still selected.)

2. Choose the **To Top** button in the **Composition** toolbar. The selected objects are now on the top of the stack.

Choose the To Top button to bring the current selection to the top of the stack.

The selected objects are now on top.

## Adding Wing Detail

Before the dragonfly is complete, you need to add one more detail.

1. Using the **Freehand** tool from the **Tools** toolbar, draw a simple spiral shape on the topmost wing. Since the Silk stroke is still the active stroke in the Paint Style menu, your new path displays the same Silk stroke.

Choose the Freehand tool from the Tools toolbar.

Dragonfly with a Silk spiral on the wing.

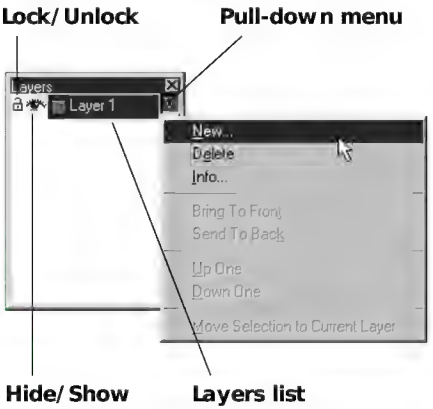
## Layering

Another useful feature of Expression is Layers. You can put elements of your image on different layers which you can then lock or hide. A locked layer cannot be edited. This can be helpful when you want to ensure elements are not inadvertently changed. Hidden layers do not print. This can be useful when you want to trace over an image, then hide it.

### To create a new layer:

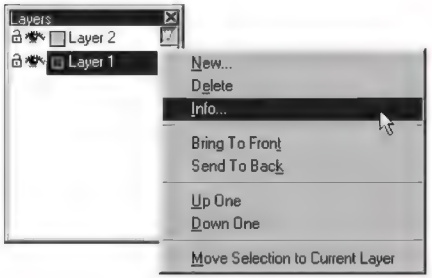
1. Choose **Window menu▸ Layers**. The Layers palette appears. Each layer is assigned a unique color and name.

2. Click the icon above the scroll bar to display the Layers pull-down menu.




The Layers palette with pull-down menu.

3. Choose **New**. A new layer is created and named Layer 2.



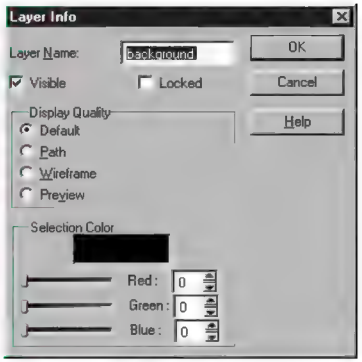

A new layer is created.

### To set name and color for a layer:

1. Select **Layer 2**.

2. Click the icon above the scroll bar to display the Layers pull-down menu.

3. Choose **Info**. The **Layer Info** dialog appears.




The Layer Info dialog.

4. Enter the name "**background**" and select the color you wish to assign to the layer. You can also set the display quality, hide, and/or lock the layer in this dialog.

5. Click **OK**.

### To lock/unlock a layer:

1. Click to select **Layer 1**.

2. Click the **Lock** icon next to the layer's name in the Layer palette. Now you can not mistakenly edit the dragonfly. If you decide later that you want to edit the dragonfly unlock the layer and you will be ready to work.

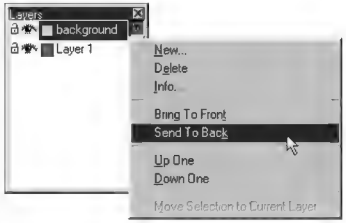
**Locked** — — **Hidden**
**Unlocked** — — **Shown**

Lock/Unlock and Hide/Show icons.

### To send layer to back:

1. Click to select the **background** layer from the **Layers** palette.

   Click the icon above the scroll bar to display the Layers pull-down menu.



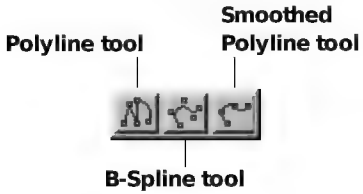

Background layer selected and ready to send to back.

2. Choose **Send to Back**.

For more information regarding Layering, see ➤"Layering Objects" in Chapter 6, "Arranging and Editing Objects."

## Using a Supplemental Drawing Tool

In addition to the classic Freehand and Pen drawing tools, Expression includes three powerful supplemental drawing tools:




The Supplemental Drawing tools.

**Polyline** Draws straight line and circle arc line segments.

**B-Spline** Draws smooth curved line segments based on straight line control polygon.

**Smoothed Polyline** Draws curved line segments.

You may want to experiment with each of these tools to become familiar with their special features. Use the scrolls to move to a part of the document that is off the page. That way you can doodle with the tools without adding any unwanted paths to your final printing page. Of course, you can delete any paths you do not want to keep.

For more information on these drawing tools, see ➤Chapter 3, "Creating Paths."

### Creating B-Spline Spirals

1. With the **Silk** stroke still selected, click the **Supplemental Drawing Tools** icon in the **Tools** toolbar and choose the **B-Spline** tool.

The B-Spline tool and other Supplemental Drawing tools.

2. In the **Color** palette, select a blue color as your foreground color.

3. Using the **B-Spline** tool draw a spiral by clicking to place a series of points (nodes) as shown below. The B-Spline tool creates a curved path based on a polygon defined by the points you place. To end the spiral, double-click or press the **Return/Enter** key. Have fun and don't worry if your spirals are not exactly like those shown.

Drawing a spiral with the B-Spline tool.

4. Use this same technique to create a group of spirals to frame your dragonfly.

Frame your dragonfly with spirals.

5. Save your file.

**To save:**

1. Choose **File menu▸ Save As**.
2. Name the file **dfly2**.
3. Select the **Tutorial** directory.
4. Leave other settings at the default and click **Save**.

At this point you can continue with the next exercise or end your Expression work session.

## Lesson 3: Completing the Poster

In this lesson you will learn about:

- Changing the direction of a path
- Adding Text
- Creating a Skeletal Stroke
- Creating a repeating stroke
- Applying a Multi-view stroke
- Rasterizing

Open the file you created in Lesson 2 (**dfly2**) or open the file named **lesson3.xpr**.

### The Grass

Now you are ready to add the green grassy leaves to your image.

**To add grass to the image:**

1. Click an empty space or the **Deselect All** button so changes you make do not affect your spirals.
2. Select the stroke named **Taper** from the Stroke Warehouse palette.
3. Click the **Classic Drawing Tools** icon in the **Tools** toolbar and choose the **Freehand** tool.

4. In the **Color** palette, select a green color for your grass.

5. Draw a series of long, free flowing paths to represent the grass. Don't worry if your image is not exactly the same. Have fun expressing yourself!

Draw the grass.

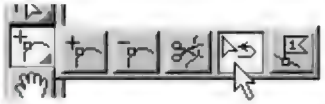
## Changing the Direction of a Path

Deselect All then use the same technique to add some cattails to your design by selecting the Skeletal Stroke named **catstail**.

When you draw the cattails, notice that the direction of the path is important. If you draw from top to bottom you get a different image than you get when you use the same stroke to draw from bottom to top. When applying a Skeletal Stoke you need to be aware of the direction of your path. However, it is easy to change the direction if you need to.

### To change direction of a path:

1. Click the **Path** tools icon in the **Tools** toolbar and choose the **Reverse Path** tool.



The Reverse Path tool.

2. Click the path. The path reverses direction.

Changing the direction of the cattail path.

## Editing the Image

To soften the effect of the blue spirals, change their stroke to the stroke named Fluid stroke.

### To edit the image:

1. Click an empty space or the **Deselect All** button.

2. Using the **Object Selection** tool from the **Tools** toolbar, select one of the blue spirals.

3. Holding down the **Shift** key, click on each remaining blue spiral until all of them are selected.

4. Select the **Fluid** stroke from the Stroke Warehouse palette. The selected paths change to reflect the new color.

The image after adding cattails and changing the stroke of the B-Spline spirals.

5. Click an empty space or the **Deselect All** button.

6. Click the **Reset Color** button in the **Paint Style** palette, so the color scheme returns to the default settings.

## The Pond

**To add a pond:**

1. Select the stroke named **Airbrush** from the Stroke Warehouse palette.

2. Edit the color to a light blue. This stroke includes transparency so the color builds up as the stroke crosses itself, much like watercolor paint.

Adding the pond.

3. Scribble a few lines with the **Freehand** tool to create the pond. Setting the stroke width to a larger size makes the job easier.

## The Flowers

**To add the irises:**

1. Click an empty space or the **Deselect All** button.

2. Select the Skeletal Stroke named **Iris** from the **Stroke Warehouse** palette.

3. Set the stroke width as you like for each instance of the iris. Remember, you can use the Shear/Width handle or the Width setting in the Paint Style palette.

4. Click the **Reset Color** button in the **Paint Style** palette to return to the default color scheme.

5. Draw the iris flowers, from the roots up to the blossom.

Draw the iris flowers from the roots up.

Adding flowers to your poster.

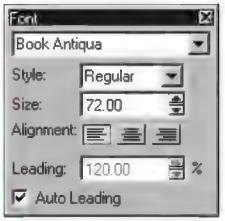
## Adding Text

Expression makes it simple to add text to your artwork and also allows you to create some interesting special effects with text.

**To create a text object:**

1. Open a new document by choosing **File menu▸ New**.
2. Choose the **Text** tool from the **Tools** toolbar. The **Font** palette appears.

The Text tool.




The Font palette.

3. Select the font and style (Regular) you want.
4. Set the size to **72.00**. The cursor changes into an I beam, indicating the application is ready to create text.
5. Click in the center of your page and type: **express yourself**.
6. Close the **Font** palette.

## Creating a Skeletal Stroke

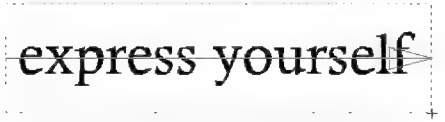
You can create a Skeletal Stroke from any picture you can draw or import. Now use the text to create a new stroke.

**To create a new stroke:**

1. Choose the **Stroke Definition Box** tool from the **Tools** toolbar. The cursor changes to a cross hair.

The Stroke Definition Box tool.

2. Starting at the upper left edge of the text, drag a marquee enclosing the entire text object. An arrow indicates the direction of your stroke. When you release the mouse button Expression opens the **Stroke Definition** window.

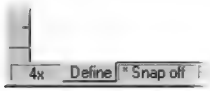



Draw a marquee around your object using the Stroke Definition Box tool to open the Stroke Definition window.

3. If needed, edit your artwork.

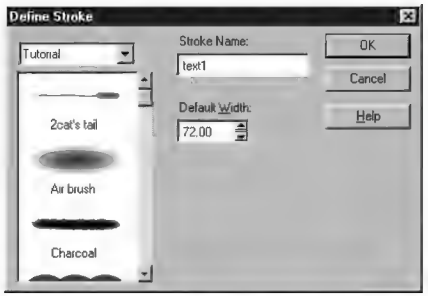
Edit art as needed.

4. Click the **Define** button at the lower left corner of the Stroke Definition window.




The Define button for the Stroke Definition window.

The **Define Stroke** dialog appears, giving you the opportunity to select a folder in which to store your new stroke.




The Define Stroke dialog.

5. Scroll to select the **Tutorial** folder.

6. Name your stroke **Text1**.

7. Set the width to **72.00**.

8. Click **OK**.

### Using Your New Stroke

Return to your original document. Make sure that your newly created stroke is selected in the Stroke Warehouse palette. Use the **Freehand** tool to draw a graceful curved path at the bottom of your scene. Adjust the width as needed. Use the **Node Selection** tool to edit the path if you wish.

Text stroke applied to a path.

## Creating Repeating Stroke

There are a lot of fun things you can do with a Skeletal Stroke. Now you are going to create a repeating stroke based on your text.

**To make parts of a stroke repeating:**

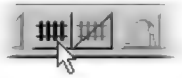
1. In the **Stroke Warehouse** palette, double-click the stroke you just created to take it back into the Stroke Definition window.

2. Click the **Anchor/Repeat Tools** icon from the **Tools** toolbar and choose the **Repeat** tool.

The Repeat tool.

3. In the **Stroke Definition** window, click or click-drag to select all the objects you want to set as repeating. For our example, drag a marquee to select the whole text object.

4. Choose the **Make Repeating** button from the **Actions** toolbar.



The Make Repeating button.

5. Click the **Define** button at the bottom of the Stroke Definition window. The Stroke Definition dialog appears.

6. Name your repeating stroke **repeatx**.

7. Click **OK**.

### Applying the Repeating Stroke

In the Paint Style palette, be certain that your stroke, **repeatx**, is selected, with its color set to a medium blue. Now use the Freehand or B-Spline tool to draw a spiral in the pond.

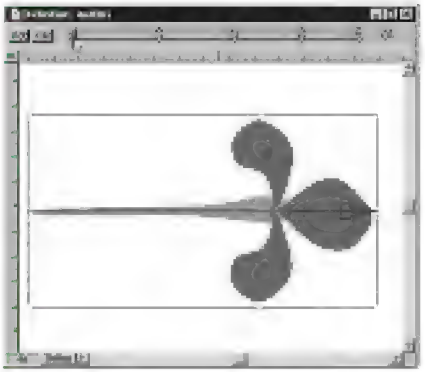
Draw a spiral in the pond.

## Multi-view Strokes

It would be unusual for all the flowers in a garden to look exactly the same. Nature doesn't behave that way and there is no reason your artwork has to either. Expression's Multi-view strokes provide you a way to quickly create a group of flowers that are related but different.

1. Select the stroke named **Multiiris** from the **Stroke Warehouse** palette. Notice that its animation in the Stroke Warehouse palette shows an iris opening and closing again.

2. Double-click the stroke to display it in the Stroke Definition window.



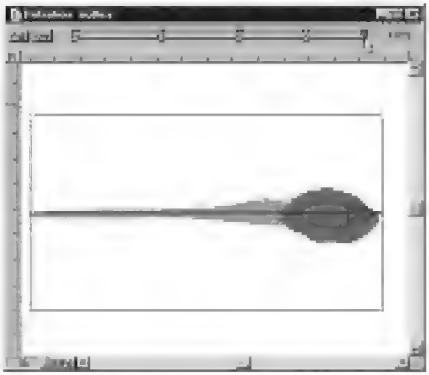
The Multiiris stroke in the Stroke Definition window. The first keyframe or 0% appears.

The Multiiris stroke is made from five pictures moving from a fully open iris to an iris bud. In the Stroke Definition window there is a timeline across the top. A marker indicates each position or keyframe.

3. Click the left keyframe to see the iris fully opened.

4. Click the next keyframe to the right to see the iris starting to close.

5. Click the right most keyframe to see the bud completely closed.

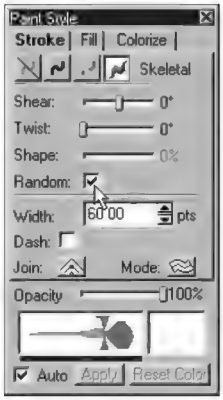


The Multiiris stroke set to view the last keyframe or 100%.

6. Close the **Stroke Definition** window by clicking the close button in the upper left corner (Macintosh) or upper right corner (Windows).

### Which View Displays?

When you apply a Multi-view stroke to a path, Expression determines which view appears. It may display the open flower, the closed bud or some variation between the two key pictures. Which shape or view appears is controlled by the Paint Style palette.




The Paint Style palette.

You can choose Random or you can use the Shape slider to specify which view. With the Shape slider set to 0%, the first key frame appears. With the Shape slider set to 100%, the last keyframe appears. Any setting between the two extremes determines which in-between view actually appears. Expression automatically creates between views, based on the keyframe pictures you define.

**To set which view displays:**

1. In the **Paint Style** palette, select the **Random** option.
2. Click **Apply**. Expression randomly assigns a view to each path you draw.

### Applying the Multi-view Stroke

**To apply the Multi-view stroke:**

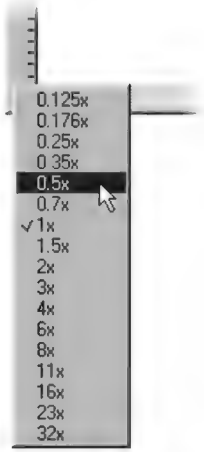
1. In your main document, using the **Object Selection** tool, click to select one of the iris flowers in your image.
2. Choose **Edit▸ Select By**.
3. Select **Same Stroke** to select all the flowers.
4. Click the **Multiiris** stroke to apply it to all the selected paths. Each flower appears slightly different.

A new view is assigned to each path.

### Center the Image

Your image is almost complete. The next thing to do is make certain that the whole image is within the printable area of the page.

Zoom out by click-holding on the zoom button at the lower left corner of the document. Select 0.5x which means the image appears at half the actual size. If you still can not see the whole image select 0.35x to zoom out even more.




Select the 0.5% zoom.

**To resize the whole image:**

1. Make sure all the layers are unlocked.
2. Choose the **Select All** button from the **Composition** toolbar.
3. Using the **Object Selection** tool from the **Tools** toolbar, hold down the **Shift** key and drag the bounding box Resize handle toward the center of the image.

Holding down the **Shift** key as you resize a selection constrains the change to the current aspect ratio.

4. Once the size is correct, click in the center of the image and drag to reposition it in the middle of the page.

Center your image on the page.

## Save the Completed Express Yourself Poster

**To save your completed image:**

1. Choose **File menu▸ Save As**.
2. Name the file **dfly3**.
3. Select the **Tutorial** directory.
4. Leave other settings at the default and click **Save**.

Even when you intend to rasterize your image, it is a good idea to always save the file as an Expression document first. Once the image is rasterized you cannot make changes to the rasterized artwork in Expression. Take the rasterized image into an image editing application such as Fractal Design Painter for additional changes.

## Printing Your Image

Now your artwork is ready to print. This image includes transparency, a concept that is difficult for most vector graphics applications and Postscript printers. Expression must rasterize or convert the outline information into bitmap information before it can be printed.

**To print:**

1. Choose **File menu▸ Print**. The Print dialog appears.
2. Select a printer from the **Printer** pop-up menu.
3. Set the number of copies you want printed.
4. Since this image includes a transparency, enable the **Rasterize Before Printing** option.

5. Set the dpi that your printer supports.

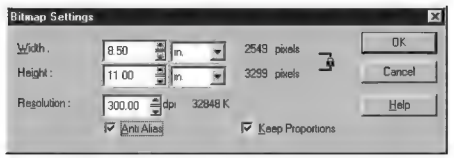
6. Click **OK**. Expression converts the image to a bitmap image and sends the bitmapped image to the printer. The process of rasterizing takes some time to complete. Expression displays a progress bar at the bottom of the screen and the cursor changes into an hour glass.

## Rasterizing

You may also want to save your artwork as a bitmap image so you can work with it in an image editing program such as Fractal Design Painter or Adobe Photoshop.

**To rasterize an image:**

1. Choose **File menu▸ Save Bitmap**. The **Bitmap Settings** dialog appears.




The Bitmap Settings dialog.

2. Set the **width** and **height** you want.

3. Set the **resolution** to match your printer's capabilities. 300 dpi usually gives excellent results.

4. Click **OK**.

5. Select a directory in which to save your file, name the file and select the file format you prefer.

6. Click **Save**. Converting a file to bitmap takes some time as each pixel in the image needs to be defined. A progress bar at the bottom of the window displays the percent completed.

The Save progress bar.

For more information on rasterizing, choosing file formats, anti-aliasing and exporting, see ➤"Opening and Saving Documents" in Chapter 1, "Overview of Expression."

Now you are ready to freely "express yourself" using Expression! Check the **Expression Creative Techniques** guide for more ideas on using Expression.

# 3

# Creating Paths

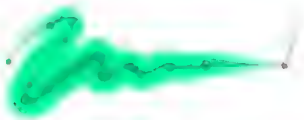
Like other draw applications, Expression is object-based. This is what makes Expression artwork so easy to edit—after you create an object, you can select it and change its size, shape or paint characteristics. Objects in Expression are made up of paths. A path is simply a straight or curved line with points which allow you to edit its shape. This chapter discusses how to create and edit paths.

## Understanding Paths

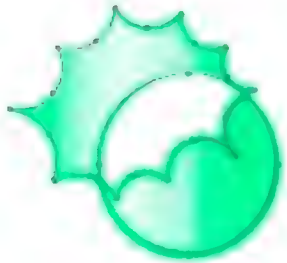
A path is a continuous line made up of one or more curved or straight path segments. Each path segment is defined by a series of points. These points, and the tangent handles associated with the points, can be moved and edited to change the shape of the path. Expression uses standard computer graphics tools to draw and edit paths.

Two or more paths can be combined to make a compound path. A compound path is a set of paths which Expression treats as a single object. Compound paths are useful primarily for creating objects with holes. For more information regarding compound paths, see ➤"Creating Compound Shapes," later in this chapter.

Every path has a beginning and end. Expression identifies the end point on a path with an arrow indicating the direction of the path. With an open path, it is very easy to identify the beginning and ending points. In a closed path, such as a circle or rectangle, the beginning and ending points are at the same location.



Open path.



Closed path.

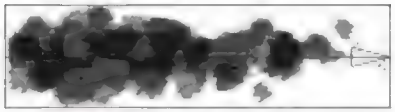


Compound path.

Any path or shape you create can be defined as a Skeletal Stroke or can be combined with other paths or shapes to create a Skeletal Stroke. The Skeletal Stroke can then be applied to a path.



Create a simple path...



Create a Skeletal Stroke from any vector image...



Apply the Skeletal Stroke to your path.

The direction of a path is very important in Expression when using Skeletal Strokes. Since Skeletal Strokes often have a distinct start and end, you may want the stroke image to be pointing in a certain direction.

Freehand path, left to right and right to left.

## Drawing Tools

Expression provides nine basic drawing tools:

- Freehand tool
- Pen tool
- Polyline tool
- B-Spline tool
- Smoothed Polyline tool
- Line tool
- Rectangle tool
- Ellipse tool
- Text tool

These tools allow you to create new paths or to add points to an existing path. By default, all of the drawing tools (except the Freehand tool) automatically add points to an existing path when you position the cursor over an existing endpoint and continue drawing. You can disable the behavior by setting a user preference. For more information on setting user preferences, see ➤"Setting Preferences" in Chapter 1, "Overview of Expression."

You can force any drawing tool (including the Freehand tool) to continue an existing path by holding down the **Shift** key. The cursor changes as it is positioned near the endpoint.

The cursor changes as it nears the endpoint.

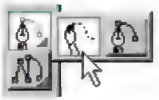
### Creating Freehand Paths

The **Freehand** tool allows you to create paths by drawing freely. Expression automatically creates points based on the path you draw.

If you are using a stylus, the pressure sensitivity can be enabled to take advantage of pressure strokes. For more information on using a stylus, see ➤"Using a Stylus," later in this chapter.

**To create a freehand path:**

1. Click the **Classic Drawing Tools** icon in the **Tools** toolbar and choose the **Freehand** tool. The cursor changes to a paintbrush.



Choose the Freehand tool.

2. Drag the mouse or stylus across the workspace.

3. When your path is finished, release the mouse. A vector path is created.

Creating a freehand path.

## Creating Bézier Paths

The **Pen** tool is used to create a Bézier path point by point. The tangent handles of each point control the shape of the path.

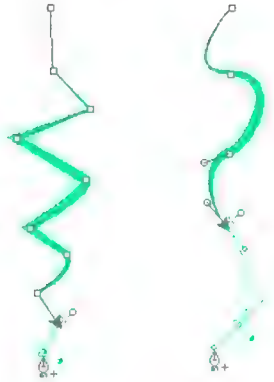
You place a Bézier point by clicking or dragging, creating corner or curve points. The points of a Bézier path can be converted from corner to curve or curve to corner.

You can also use the following keys to create other effects.

- Hold down the **Shift** key while dragging to constrain the angular relationship between the following tangent handle and the Bézier point.

Constraining the angular relationship, with and without the Shift key.

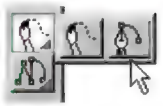
- Hold down the **Option/Alt** key before or during the drag to lock the preceding tangent handle in its current position: the drag thus affects the position of the following tangent handle only. If you release the **Option/Alt** key before releasing the mouse button, the preceding tangent handle snaps back into the position symmetrically opposite the following tangent handle.



Locking tangent handles while drawing, with and without the Option/Alt key.

### To create a Bézier path:

1. Click the **Classic Drawing Tools** icon in the **Tools** toolbar and choose the **Pen** tool. The cursor changes to a pen.



Choose the Pen tool.

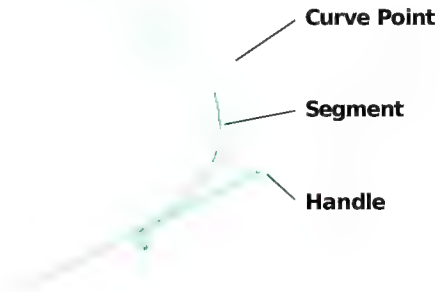
2. Click or drag on the workspace to create a point.

Clicking creates a point with tangent handles retracted (corner point).

Click to create a corner point.

Dragging creates a point with preceding and following tangent handles (curve point). Click then drag the tangent handles as needed to adjust the shape of the path. This allows you to edit the Bézier path segments as the path is created.

By default, the preceding handle is symmetrically opposed to the following tangent handle, an equal distance from the point you are creating.




Drag to create a curve point.

3. Create other points as needed.

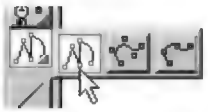
4. Double-click or press the **Return/Enter** key to end the path.

## Creating Polylines

The **Polyline** tool is used to create straight lines and arc segments.

### To create a polyline curve:

1. Click the **Supplemental Drawing Tools** icon in the **Tools** toolbar and choose the **Polyline** tool. The cursor changes to a polyline cursor.



Choose the Polyline tool.

2. Click to place a point at the location of the click.

3. Click again to create a straight line segment.

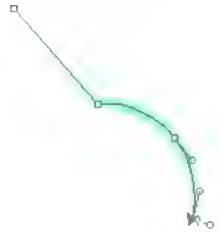
Click to create a straight line segment.

4. Drag to create an arc segment. The initial mouse click determines the tangent of the arc. The arc's endpoint is determined by the position of the point when the mouse is released.

Drag to create an arc.

5. Click or drag to create other points as needed.

6. Double-click or press the **Return/Enter** key to end the path. The path is automatically converted to Bézier points.



Double-click to complete the path.

## Creating B-Splines

The **B-Spline** tool is used to draw smooth curves. It works like a standard polyline tool—you simply click to place points, or nodes, on the page. Instead of connecting the nodes with straight line segments, the B-Spline tool creates a smooth curve which passes near each node.

As you draw, both the B-Spline curve and the imaginary polyline connecting the vertices are displayed to give you interactive feedback.

### To create a B-Spline curve:

1. Click the **Supplemental Drawing Tools** icon in the **Tools** toolbar and choose the **B-Spline** tool. The cursor changes to a B-Spline cursor.

Choose the B-Spline tool.

2. Click to create the first point and all other points as needed. No dragging is necessary to create a B-Spline curve. The curve is automatically stretched between clicks as you move the mouse.

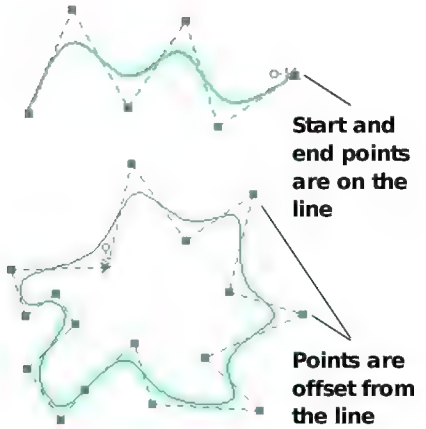
Simply click to automatically create a curve.

3. Double-click to define the end point or click on the beginning point to create a closed shape.

   When you complete a shape, the path is displayed as a solid line while the imaginary polygon is displayed as a dotted line.

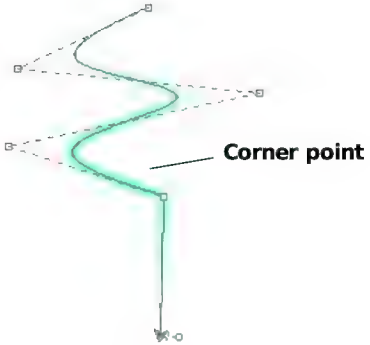
Double-click to complete the path.

- When using the B-Spline tool on an open path, the beginning and ending points are located on the line but all the points between the first and last points are offset from the path itself. On a closed path, all the points are offset from the path itself.




B-Spline paths.

- Moving or deleting an existing point modifies the shape of the B-Spline path.
- Using the Add Point tool to add a new point converts the path into a standard Bézier path.
- **Option/Alt**-click starts a new B-Spline curve whose beginning point is the same as the end point of the previous curve. This creates a cusp or corner point on the path.




Use Option/Alt-click to create a corner point.

## Creating Smoothed Polylines

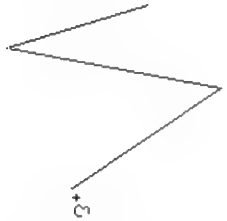
The **Smoothed Polyline** tool creates a smooth path based on your placement of points. While drawing, straight line segments appear, connecting each point created. Upon completion, the straight line segments are replaced by smoothed curves, each point behaving as a Bézier curve point.

### To create a Smoothed Polyline curve:

1. Click the **Supplemental Drawing Tools** icon in the **Tools** toolbar and choose the **Smoothed Polyline** tool. The cursor changes to a polyline cursor.

Choose the Smoothed Polyline tool.

2. Click to create the first point and all other points as needed.



Create all points as needed.

3. Double-click to define the end point or click on the beginning point to create a closed shape.

Double-click to finish the shape.

## Creating Lines

The **Line** tool creates straight path segments. The beginning point is defined by the first click and the end point, by the location at which the mouse button is released.

### To create a line:

1. Choose the **Line** tool from the **Tools** toolbar. The cursor changes to a crosshair cursor.

Choose the Line tool.

2. Drag to create a straight line. The line is previewed on screen as you move the pointer.

   Hold down the **Shift** key to constrain the angle of the line between the beginning and ending points. The angle of constraint can be set by choosing **File menu▸ Preferences: Options▸ Angular constraint steps.**

3. Release the mouse button at the location you want to use as an end point.

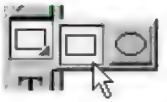
4. Drag again on the end point to continue your path with another straight line segment.

## Creating Rectangles or Squares

The **Rectangle** tool creates a rectangle or square. One corner of the rectangle is set to the location at which you start the drag while the opposite corner is set to the position at which you release the mouse button.

### To create a rectangle or square:

1. Click the **Shape Object Tools** icon in the **Tools** toolbar and choose the **Rectangle** tool. The cursor changes to a crosshair.



Choose the Rectangle tool.

2. Drag to create a rectangle. The path previews on screen as you drag.

   Hold down the **Shift** key to constrain the rectangle to a square.

Drag to create a rectangle.

3. Release the mouse button to complete the shape.

## Creating Ellipses and Circles

The **Ellipse** tool creates a ellipse (oval) or circle. Each ellipse has a bounding box which is the smallest rectangle that can contain the ellipse. One corner of the bounding box of the ellipse is set to the location at which you start the drag while the opposite corner is set to the position at which you release the mouse.

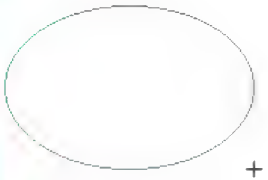
### To create an ellipse or circle:

1. Click the **Shape Object Tools** icon in the **Tools** toolbar and choose the **Ellipse** tool. The cursor changes to a crosshair cursor.

Choose the Ellipse tool.

2. Drag to create an ellipse. The path previews on screen as you drag.

   Hold down the **Shift** key to constrain the ellipse to a circle.



Drag to create an ellipse.

3. Release the mouse button to complete the shape.

➔ **Note:** The Ellipse is a special class of path; unlike the rectangle and line segment. A complete ellipse is created by default, but you may move the ellipse's special point to specify beginning and ending points, thus creating a partial elliptical line segment.

You then use the Ellipse Closure controls in the Action toolbar to specify whether the open ends of a partial ellipse are unconnected, connected to the center point of the ellipse with two straight line segments or connected by a single straight line segment.

The Ellipse Closure controls.

For more information regarding the use of the Action tools, see ➤"Editing Ellipses" in Chapter 6, "Arranging and Editing Objects."

## Creating Text

The **Text** tool creates text objects based on True Type or Type 1 fonts. (Bitmapped fonts are not supported since Expression needs the vector based outlines.) You can set characteristics for text objects, such as font, style and size.

Each of the characters of a text object can have its own individual stroke and fill attributes.

### To create a text object:

1. Choose the **Text** tool from the **Tools** toolbar. The cursor changes to an I-beam and the Font palette appears.

Choose the Text tool.

2. Click at the position where you want to create your text object.

Click and enter your text.

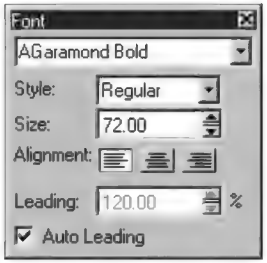
3. Type characters as needed.

### To set characteristics for a text object:

1. Using the **Object Selection** tool from the **Tools** toolbar, select a text object.

Select the text object.

2. If the Font palette is not displayed, choose **Window menu▸ Font** to display the Font palette.




The Font palette.

3. From the pull down menu choose the font you prefer.

4. From the **Style** list pull down choose the style you prefer. The selections available in this menu vary depending on the font selected.

5. Set the size by using the up/down arrows or highlight the **Size** entry box and type the size you prefer.

6. Set the text alignment. You can choose from right, center, and left justify.

7. Set the leading. The **Leading** entry box is only available when **Auto Leading** is deselected.

## Using Text on a Path

Expression gives you the ability to assign text to flow along a path.

Some Text on a Path constraints:

- Multiple lines of text are not supported. Only the first line of text is applied to a path.
- Text that extends beyond the end of the path proceeds in a straight line following the direction of the tangent at the end of the path.

➔ **Note:** Alignment and Leading are only useful when using more than one line of text.

### To apply text to a path:

1. Create a path or select a path using the **Object Selection** tool from the **Tools** toolbar.

2. Choose the **Text** tool from the **Tools** toolbar.

3. Click on the path at the point you want the text to start. The cursor changes as it is positioned over the path.

4. Type characters as needed.

The text is added to the path.

### To apply existing text to an existing path:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the path, hold down the **Shift** key and select the text.

Select the existing text and path, using the Shift key to select multiple objects.

2. Choose **Objects menu▸ Text on Path▸ Attach**.

The text is applied to the existing path.

### To change the origin point for text on a path:

1. Using the **Object Selection** tool or **Node Selection** tool from the **Tools** toolbar, select the path containing text.



Select the text insertion beam.

2. Drag the text insertion beam along the path.

Move the text insertion beam to move the origin point.

### To separate text from a path:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the path containing text.

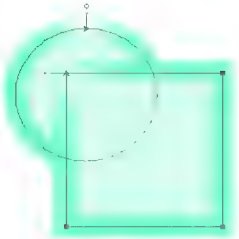
2. Choose **Objects menu▸ Text on Path▸ Release**. Text is released from the curve.

## Creating Compound Shapes

In a compound shape, two or more paths are grouped in a special way so that the shape of one path is "cut out" of the other. This function can be very useful in creating letters such a A, O, P and R but can also be used for creating more interesting shapes and objects which you can "see through" to view objects beneath.

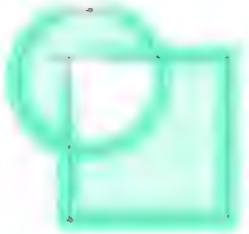
### To create a compound shape:

1. Using the **Object Selection** tool from the **Tools** toolbar, select two or more paths.



Select your objects.

2 Choose **Objects menu▸ Compound Object▸ Make**.



A compound shape is created from the selected objects.

## Filling Complex Shapes

On simple shapes, rectangle, ellipse, or closed path, it is easy to tell what is inside and should therefore be filled. On an open path an imaginary line connects the first and last points thus defining which areas are inside.

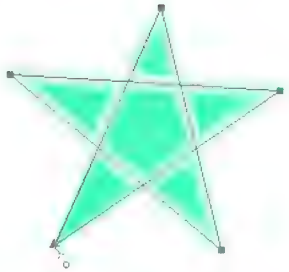
However, on any shape where a path crosses itself, or where one path encloses another path, Expression must decide which areas to fill and which to leave empty.

The **Fill Rule Control** in the Paint Style palette lets you set which of two methods is used in applying your fill to such an object:

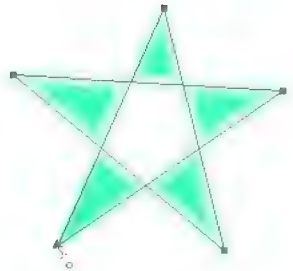
- Non-Zero Winding Rule
- Even-Odd Rule

These two choices are based on standard Postscript rules but you may find it simplest to just experiment to get the desired effect. The traditional example used to illustrate the two methods is a star drawn with five lines, creating a pentagon in the center. With the Non-zero Winding Number rule the pentagon is filled. With Even-Odd rule the pentagon is empty.

➔ **Note:** For more technical explanation of Non-Zero Winding Number rule and Even-Odd rule, see ➤Appendix B, "Glossary."



Non-Zero Winding Rule example.



Even-Odd Rule example.

### Non-Zero Winding Rule

All areas within the object, including overlapping areas, are filled.

➔ **Note:** The direction in which the path is drawn makes a difference when filling a compound path with the Non-zero Winding rule. Expression automatically reverses one path when you create a compound shape. But some shapes may still need to have a path reversed. If you find yourself with a shape that is not being filled as you thought it would try reversing one of its paths.

### Even-Odd Rule

Overlapping areas are not filled, and multiple overlaps alternate between filled or not filled.

**To fill a compound shape:**

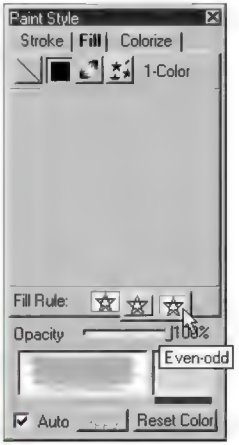
1 Using the **Object Selection** tool from the **Tools** toolbar, drag a marquee to select two or more over-lapping objects.

2. Choose **Objects menu▸ Compound Object▸ Make**.

Original elements of the compound shape.

3. Choose **Window menu▸ Paint Style** to display the **Paint Style** palette.

4. Click on the **Fill** tab.




The Paint Style palette.

5. Click on the **Fill Rule** button and select **Even-Odd rule** or **Non-Zero Winding rule**. All objects fill according to the rules of your selection.

Even-Odd and Non-Zero Winding rule.

## Using The Clipper (Masking)

Using Expression's clipper, you can mask particular areas of your artwork. A mask or clipper allows only those objects or parts of objects that lie inside the mask path to be seen. This operation is similar to using a cookie cutter; the area you cut out of the dough is the area you keep.

The masking object must be a simple or compound path. Text and grouped paths can not be used as masks.The top-most object is used as the mask and its original fill is discarded. Strokes and fills from lower layer base objects only appear in the masked area.

### To clip or mask an object:

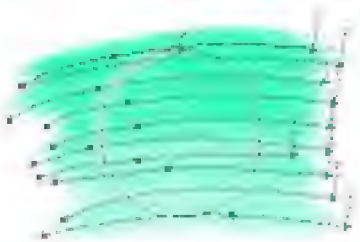
1. Create or import your mask and base objects as needed.

2. Using the **Object Selection** tool from the **Tools** toolbar, place the mask object over the base objects to be clipped.

   If the mask object is not the front or top-most object, select it, then choose **Arrange menu▸ To Front** or **Command/Ctrl+F** to bring it to the top.

You may also wish to change the stack order of other objects within your mask. Choose **Arrange menu▸ Up One** or **Down One** change the order of the objects as needed.

3. Select the mask and the base object(s) to be masked.



Select objects to be masked.

4. Choose **Objects menu▸ Clipper▸ Make**.

A clipped object.

### To release a clipped object:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the masked object.

2. Choose **Objects menu▸ Clipper▸ Release**.

## Using Boolean Operations

Expression supports Boolean operations which allow you to create closed paths based on the area enclosed by two source paths.

➔ **Note:** Boolean operations are also known as pathfinder operations to Adobe Illustrator users.

The source objects or paths may be opened or closed paths. The area enclosed by an open path is defined by an unseen straight line segment connecting the beginning and end points of the open path. Paths created by Boolean operations are always closed paths and may also be compound paths.



Original objects before Boolean operations.

The Boolean functions supported are:

**Union** Creates a new path based on the outline of all selected source paths as if they were merged into one object. Paths inside are ignored.



Union path.

**Front minus Back** Creates a new path that contains areas in the front path that are not overlapped by areas in the back path.



Front minus Back path.

**Back minus Front** Creates a new path that contains areas in the back path that are not overlapped by areas in the front path.



Back minus Front path.

**Intersection** Creates a new path that contains areas where the selected source paths overlap. Areas and paths that do not overlap are ignored.



Intersection path.

## Setting Boolean Preferences

Source paths can be retained or discarded, based on a Preference you set.

**To set Boolean preferences:**

1. Choose **File menu▸ Preferences**. The Preferences dialog appears.
2. From the Options tab, select the **Path operations: keep original** checkbox to keep the original paths or deselect to discard original paths after applying a Boolean operation.

## Applying Boolean Operations

Boolean operations may be applied to a selection containing more than two source paths. In this case, the operation is applied first to a pair of selected paths. Then the same operation is applied to the new path and the next path in the selection. This process is continued until all source paths have been processed. When applying Boolean functions to multiple paths, the selected paths are processed in order depending on the type of Boolean functions you are applying.

**Union or Intersection** Order is of no importance.

**Back minus Front** Paths are processed from the back to front.

**Front minus Back** Paths are processed from the front to the back.

Paths resulting from Boolean operations are painted with the paint characteristics of the front-most selected path for Unite, Intersect and Front minus Back operations. With Back minus Front operations the paint characteristics are taken from the back-most selected path.

### To apply Boolean 6363Path Operations:

1. Using the **Object Selection** tool from the **Tools** toolbar, select two or more paths.
2. Choose **Objects menu▸ Path Operations** then select whichever operation you prefer. You can also use the **Boolean Operator** buttons on the **Miscellaneous** toolbar to complete the same functions.

Boolean Operators.

## Blending Paths

With Expression you can create a series of new paths based on two different source paths.

Blending paths.

The Blend command allows you to specify the number of steps in the blend, then automatically generates the new paths based on the characteristics of the source paths. The resulting paths are placed into a single group. The original source objects are left untouched.

The following characteristics are interpolated during a blend:

- Node and object position
- Color
- Line/Stroke width
- Opacity
- Shape parameter of Multi-view strokes

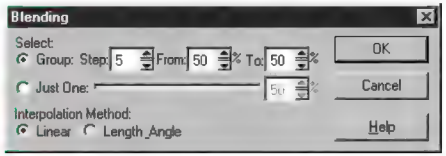
Characteristics such as; stroke definition, cap/join types, outline/fill types can not be interpolated. These characteristics are taken from the topmost source path in the stacking order.

### To blend paths:

1. Create two paths. These paths may be open or closed but may not be grouped.

Create two paths to blend.

2. Choose the **Blend** button from the **Miscellaneous** toolbar or choose **Objects menu▸ Blend Paths**. The Blending dialog appears.




The Blend Path dialog.

3. Select **Group** to create two or more blended shapes or select **Just One** to create one blended shape.

   When you select a group of blended shapes use the **Step** box to specify the number of steps or new shapes you want. Use the up and down arrows or enter a number in the entry box.

   Use the boxes labeled **From** and **To** to specify where you want the new shapes created. Expression automatically selects evenly spaced positions when you specify the number of steps. The From and To boxes give you additional control.

   When you select **Just One**, use the slider or the **%** box to specify where you want the new shape created. Expression automatically selects 50% as the position for the new shape. The slider or % entry box give you addition control.

4. Select a method for interpolating path geometry:

   **Linear** Each pair of corresponding points is interpolated without regard to its relationship with other pairs of points.

   **Length Angle** Interpolates the angle and distance between consecutive points. This usually results in more shape constancy along the steps of the blend.

5. Click **OK**. The blended steps are displayed as a grouped object and are selected.

6. If desired, choose **Arrange▸ Ungroup** or press **Command/Ctrl+U** to ungroup the new paths.



Blended paths

## Tagging Paths for Blending

You can also set up a point-to-point correspondence between the two paths, which sometimes produces better results.



Blending with tags

The paths do not need to have the exact same number of points. Expression automatically compensates for any difference.

By default, correspondence between paths is automatic. However, this feature allows you to tag specific points before using the Blend command to manually set the point-to-point correspondence.

### To tag points for Blending:

1. Click the **Node Tools** icon in the **Tools** toolbar and choose the **Node Selection** tool.

2. On first source path, starting from the beginning point and working toward the endpoint, click on the points you want to tag. The point changes from a white box to a larger solid box when selected.



Tagged points change to solid boxes.

3. On the second source path, starting from the beginning point and working toward the end point, click to tag an equal number of points.

4. Choose the **Blend** button from the **Miscellaneous** toolbar or choose **Objects menu▸ Blend Paths**. The Blending dialog appears.

5. Choose a method for interpolating path geometry: **Linear** or **Length Angle**.



Linear interpolation with tagged points.



Length Angle interpolation with tagged points.

6. Expression then matches each tagged point on the first source path with the corresponding tagged point on the second source path.

If the blend did not come out as expected, reverse the direction of one of the paths and try the blend again. Choose **Objects▸ Reverse Path** or click the **Path Tools** icon in the **Tools** toolbar and choose the **Reverse Path** tool.

## Blending More Than Two Paths

You can use the Blend command on more than two source paths. In this case, Expression blends the first two paths, creating the number of steps you requested, then blends the second path with the third path, again with the same number of steps. The process continues until all source paths have been blended.

## Using a Stylus

In most cases, there is no different between drawing with the mouse verses drawing with a stylus. However, when using the Freehand drawing tool, you have the ability to take advantage of the pressure sensitive stylus to vary the width of Skeletal Strokes. A stroke appears thin where light pressure is applied, and thicker where heavy pressure is applied.

### To enable pressure sensitivity:

1. Choose the **Freehand** tool from the **Tools** toolbar.
2. Choose the **Enable Pressure Sensitivity** button from the **Actions** toolbar.

### To disable pressure sensitivity:

1. Choose the **Disable Pressure Sensitivity** button from the **Actions** toolbar.

# 4

# Using Color

Color has a powerful impact on your artwork and Expression provides you with a variety of tools and methods for controlling color to match your needs. This chapter discusses the use of color in Expression.

## History of Colors

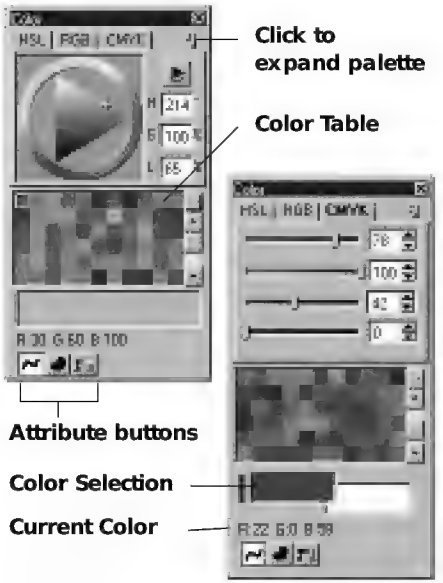
Color is a function of light, the information our eyes gather based on light reflected off, or emitted from, objects. Through the centuries artists have learned to use certain chemicals to create specific colors as pigments. The way color pigment is mixed to create different colors is quite a science.

Today an artist can purchase tubes of pigment in a huge range of standard colors but even so, artists will always mix colors to create new ones.

With the electronic age we are now capable of showing color on television and computer screens (CRTs or Cathode Ray Tubes), without applying pigment to canvas or paper. The media (paint, crayon, computer screen, etc.) determine which colors can be created. In the real world there are far more colors than we can faithfully reproduce with paint pigment or on a Cathode Ray Tube.

## The Color Palette

The Color palette is divided into two parts: the **Color Picker** pane and the **Color Table** pane. The Color Picker pane enables you to edit the color currently selected in the Paint Style palette. The Color Table pane enables you to replace the currently selected color with a color from a library of colors.




The Color palette.

### Color Table

Toggle the Color Table display on or off by clicking the **key** in the upper right corner of the Color palette. When you select a color from the color table the color pane, regardless of mode, adjusts to reflect the color you have chosen.

The Color Table can display the colors with no border, black border or white border. For more information on setting the border preferences, see ➤"View and Palettes Tab" in Chapter 1, "Overview of Expression.".

### Color Selection

The bottom of the palette displays the currently selected color(s).

When editing a Skeletal Stroke, two rectangles appear at the bottom of the Color palette indicating the primary and secondary colors that are currently selected. The left-hand rectangle, which is in front represents the primary color. The right-hand rectangle, in the back represents the secondary color. A bar indicates which of the two color swatches is currently active. Click a swatch to make it active. A secondary color is frequently used in a Natural-Media stroke.

When editing a Fixed Width stroke, only one rectangle appears at the bottom of the Color palette.

Color palette color selection rectangles.

## Current Color

Below the current color swatches is the name of the current color. The name will be the RGB or CMYK color model numbers, or the name you have assigned to a custom color. For information on color models, see the next section ➤"Using Color Models." For information on creating a custom color, see ➤"Creating Custom Colors," later in this chapter.

## Attribute Buttons

Click one of the three buttons to choose which attribute to edit: Stroke Color, Fill Color or Gradient Color. For more information on applying attributes to strokes and fills, see ➤Chapter 5, "Applying Strokes and Fills."

Click **Stroke Color** to edit the color of the current stroke.

Click **Fill Color** to edit the color of the current fill.

Click **Gradient** to open the Gradient palette, then select the gradient you wish to edit. For more information on applying gradients, see ➤"Using Gradients," later in this chapter.

# Using Color Models

You can select colors in Expression visually by picking them from Expression's Color palette. You can choose a color from the palette color table, from one of the three available HSL color pickers, or enter a specific RGB, or CMYK color value. Internally, Expression saves the color information as CMYK or RGB information, depending on how the color was selected.

Depending on the use or your final image, electronic or paper, determine which color model is appropriate for your project. As a rule of thumb, electronic images are best in RGB, and printed images are most commonly created in CMYK.

## Specifying HSL Colors

HSL defines shades using Hue, Saturation and Lightness. This color model describes the way artists generally think about color.

**Hue** The color from the color spectrum, i.e., red.

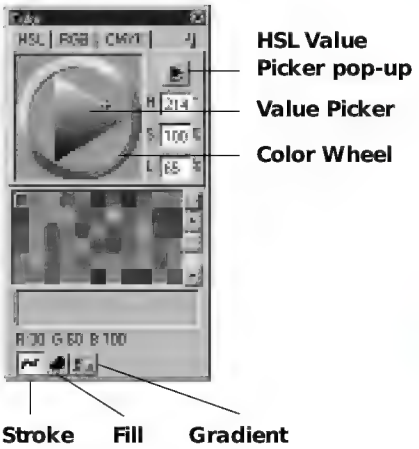
**Saturation** The purity of the color. Gray has a saturation of 0% while pure red has a saturation of 100%. A low saturation of red creates a muddy red.

**Lightness** The light value in the color. 100% lightness of any color gives white and 0% gives black. Pink has more light than a deep red.

### To select color using the HSL model:

1. If the **Color palette** is not displayed, choose **Window menu▸ Color**. The Color palette appears.

2. Click the **HSL** tab in the Color palette to display the HSL color selections.

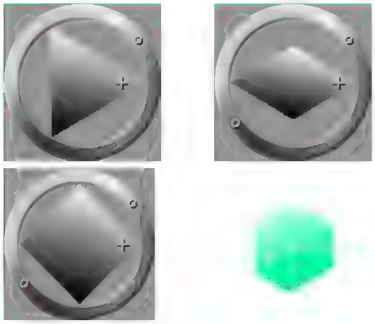



The Color palette, HSL tab.

3. Click the Color Wheel to select a basic starting hue. The Color Wheel can be fixed or draggable. For more information, see the next procedure.

4. Select an HSL Value Picker from the pop-up menu directly above the HSL color values. The Value Picker displays all the available colors within a predominant

hue. The Value Picker is represented as a triangle, diamond or square. Use the method that works best for you. For more information on Value pickers, see the following section, ➤"Understanding the Color Palette HSL Value Picker."



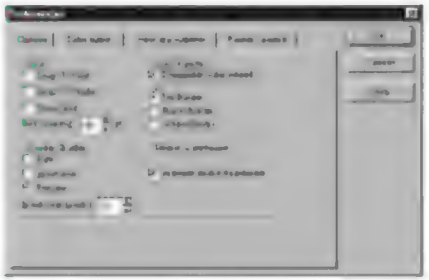
HSL value pickers and the gamut display.

5 Click in the Value Picker to select a color. Dragging left or right controls saturation. Dragging up or down controls lightness.

**To select fixed or draggable Color Wheel:**

1 Choose **File menu▸ Preferences.**

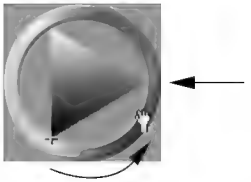
2 Click the **View and palettes** tab.



The Preferences dialog, View and palettes tab.

3 Select or deselect **Draggable Color Wheel**.

When this option is enabled, drag to rotate the Color Wheel until the desired hue is at the right tip of the triangle.



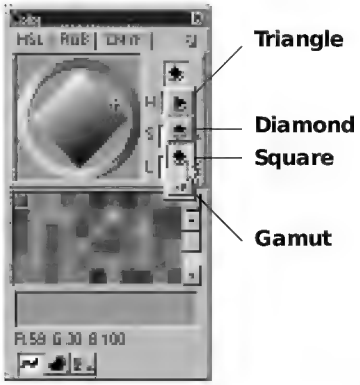
Drag to rotate the Color Wheel.

When this option is disabled, click on the color in the Color palette to select it.

### Understanding the Color Palette HSL Value Picker

The HSL Value Picker comes in three different shapes: triangle (the default), diamond, and square. The Picker's behavior is similar in all of its three shapes, so you can choose the one which best suits your tastes. The differences between them are described below.

To choose the shape of the HSL Value Picker, use the pull-down menu to the right of the color wheel, above the Hue, Saturation, and Lightness fields. This pull-down menu contains four icons. The first three icons represent the three available shapes for the Value Picker. The fourth icon (at the bottom of the menu) represents a special display mode which allows you to see whether the current color falls within the printable gamut. For more information, see ➤"Checking the Gamut," later in this chapter.



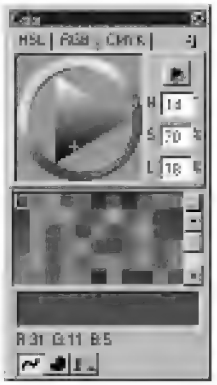

HSL Value Pickers and gamut display.

### The Triangle Value Picker

The Triangle Value Picker displays all the colors in a particular hue. The colors are organized in increasing saturation from left to right and in increasing lightness from bottom to top. The left edge of the triangle represents a 0% saturation and is therefore a neutral gray axis making the triangle Value Picker convenient for choosing neutral grays.

Dragging all the way to the right gives the purest color of the predominant hue. Dragging to the left gives muddier or grayer colors. Values span the triangle from top to bottom, with the top of the triangle being the highest value (white), the bottom the lowest value (black).

Click or drag the small crosshair to select the value you want. The current selection is shown in the swatch at the bottom of the palette.



Color palette, triangle Value Picker.

### The Diamond and Square Value Pickers

The Diamond and Square Value Pickers display all the colors in a particular hue as well as the complementary hue and all its colors. (The complementary hue is the one directly opposite the selected hue on the color wheel.) Think of the square and diamond as two triangle Value Pickers, back to back. These two modes display a richer range of colors to choose from and are particularly useful for color design purposes where complementary color schemes are often used. The diamond and square Value Pickers behave the same; the square is just larger.

- The right half of the diamond or square is the same as the triangle described above.
- The left half is a triangle pointing to the complementary (opposite) color and functions as a mirror image; dragging right selects a muddier or grayer saturation while dragging left selects a purer hue.
- Click or drag the small crosshair to select the value you want.
- The current selection is shown in the swatch at the bottom of the palette.

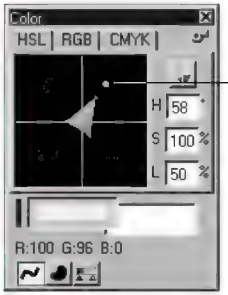
### Checking the Gamut

The fourth icon on the Value Picker pull-down menu selects the printable gamut display mode. This mode allows you to see whether the current color falls within the printable gamut. When you choose the printable gamut mode, the HSL Value Picker is temporarily replaced with a display which shows the current color in relation to the printable gamut.

After you have checked the printable gamut display, click anywhere within the display to restore the HSL Value Picker.

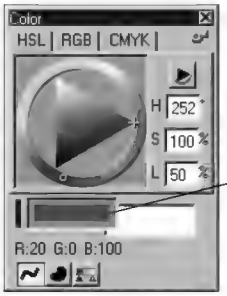
The printable gamut display shows the gamut slice corresponding to the intensity (brightness) of the current color being edited. The shape of the gamut depends on the current color calibration settings, which are specified in the Color Match tab in the Preferences dialog. For more information on the Color Match tab, see ➤"Setting Color Calibration," later in this chapter.

The current color is represented as a small circle on the display. If the circle is within the gamut, the color is printable; otherwise the output might not be what you would expect. The gamut display is not for picking colors. It is mainly for displaying how far off your chosen color is from the printable gamut. Since the gamut display only shows the gamut slice with the same intensity as the current color, it is possible that the gamut slice vanishes completely if the current color is brighter than the brightest printable color.




If a small circle does not appear in the gamut, the selected color may not come out as expected.

Not all colors visible on the computer screen can be successfully reproduced when printing on paper. When you select a hue that is outside the gamut of printable colors, a clipped color ring appears around the selected color in the selection swatch at the bottom of the palette.




A clipped color ring appears around colors outside the gamut.

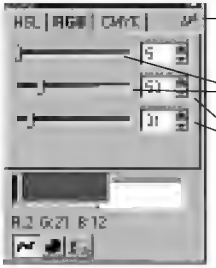
## Specifying RGB Colors

This model is based on how colored light is generated on a television or computer monitor screen. All colors are defined using combinations of red, green and blue phosphors.

With all three kinds of phosphors emitting light at full intensity, a white color is perceived. If no light is emitted, darkness or black is perceived. Because lights are added together to produce the effect of a particular color, RGB is considered to be an additive color model.

### To select color using the RGB model:

1. If the **Color palette** is not displayed, choose **Window menu▸ Color**. The Color palette appears.
2. Click the **RGB** tab in the Color palette.




The Color palette, RGB tab.

3. Adjust the three sliders to select a color or enter specific numbers for each value. You can set specific values for red, green and blue.

## Specifying CMYK Colors

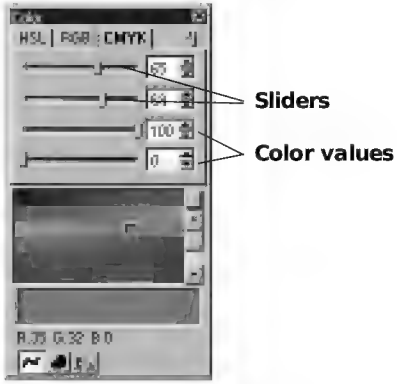
The CMYK color model is used by printers and service bureaus. CMYK is based on the process colors: cyan (C), magenta (M), yellow (Y), black (K) used in four color printing. This model is used for most printed materials such as magazines, books and brochures. All shades are defined using combinations of cyan, magenta, yellow and black.

Each kind of ink absorbs different amounts of light of different wavelengths, producing different colors. A color model based on a mixture of inks is a subtractive color model.

### To select color using the CMYK model:

1. If the **Color palette** is not displayed, choose **Window menu▸ Color**. The Color palette appears.

2. Click the **CMYK** tab in the Color palette.




The Color palette, CMYK tab.

3. Adjust the four sliders to select a color or enter specific numbers for each value. You can set specific values for cyan, magenta, yellow and black.

## Building Your Own Color Tables

Custom color tables are used to organize groups of colors. You can customize your table to control the colors in particular projects or create groups of your favorite colors. You might name your color tables according to use or color family. Use the slider at the right of the Color table to scroll through the entire table.

CAUTION: Changes to the Color Table can not be undone.

### To edit a color table:

1. If the **Color palette** is not displayed, choose **Window menu▸ Color**. The Color palette appears.

2. Display the color model tab in which you want to create the color. For more information on color models, see ➤"Using Color Models," earlier in this chapter.

3. Select or define a color in the Color palette. The color you created appears in the color selection rectangle at the bottom of the palette.

4. Click-hold on the color selection rectangle at the bottom of the palette. The Color Dropper cursor fills, indicating the color has been copied.

Click the color selection rectangle to copy the color.

5. Drag the cursor into the color table and release the mouse over the swatch you want to replace.

Drop the color into the Color Table.

6. Repeat all steps as many times as necessary. Once you have changed the table, it can be saved and opened as needed. See the following procedures.

### To load color table (replacing current):

1. Choose **File menu▸ Color Table▸ Load**. You can also click-hold the drop down menu next to the Color Table and choose **Load Color Table**.

Click-hold to display the menu.

2. Locate the color palette file and select it.

3. Click **OK**.

### To save color table:

1. Choose **File menu▸ Color Table▸ Save**. You can also click-hold the pop-up menu next to the Color Table and choose **Save Color Table**.

Click-hold to display the menu.

2. Assign the color palette a name and location.

3. Click **OK**.

**To sort the color table:**

1. Choose **File menu▸ Color Table▸ Sort**. Expression organizes the colors. You can also click-hold the pop-up menu next to the Color Table and choose **Sort Color Table**.

Click-hold to display the menu

## Blending Color Table Colors

Expression can automatically generate color in the color table by interpolating (blending two existing colors).

CAUTION: Changes to the Color Table can not be undone.

**To generate colors by interpolation:**

1. Drop a color into a swatch in the Color palette Color Table.
2. Drop a second color into another swatch at any point in the Color Table. The number of swatches between the two colors determines how many intermediate colors are generated.
3. Select the first of the two colors you copied to the Color Table.
4. Hold down the **Shift** key. The cursor changes to a flag.
5. Click the second color. The swatches between the two colors are filled with the blended colors, replacing colors previously in the Color Table.

# Using Custom Colors

Expression also provides support for custom (spot) colors. A custom color is a particular color to which you assign a name. In Expression, custom colors are always converted internally to CMYK values and saved as such.

Once defined, a custom color can be saved and applied to any number of objects within your document. Each instance maintains a reference to the custom color's definition. This makes it easy to use consistent colors on multiple objects and to make global color changes. It also allows you to take advantage of compatible software applications which perform spot color separations.

Expression also includes a large number of predefined custom colors, named intuitively and ready for your use (navy blue, rose, brick, tomato, etc.).

The colors which appear under the System tab in the Custom Color palette, are from a collection developed for the X Window System™ by the X Consortium.

# Creating Custom Colors

You can also name specific custom colors so you can use them on different objects. Editing a custom color edits all objects using that color.

### To select a custom color:

1. If the **Custom Color** palette is not displayed, choose **Window menu▸ Custom Color**. The Custom Color palette appears.

The Custom Color palette.

2. Click on a custom color name in the Custom Color list. The custom color becomes the currently selected color in the Color palette.

### To define a new Custom color:

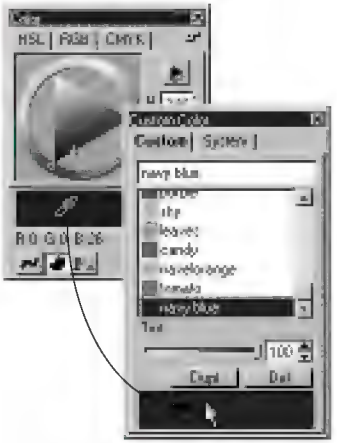
1. Select or create a new color in the Color palette. The new color appears in the color selection rectangle at the bottom of the Color palette.

   For information on creating a color in the Color palette, see ➤"Specifying HSL Colors," ➤"Specifying RGB Colors" and ➤"Specifying CMYK Colors," earlier in this chapter.

2. Click-hold on the color selection rectangle at the bottom of the palette. The Color Dropper cursor fills, indicating the color has been copied.

Click the color selection rectangle to copy the color.

3. Drag the cursor into the Custom Color palette's color selection rectangle (at the bottom of the palette) and release the mouse.



Drop the color into the Custom Color palette.

4. Type the name for the new custom color.

Enter the custom color name.

5. Press **Return/Enter**. The new name appears next to the color in the list box.

**To delete a custom color:**

1. Select the custom color from the **Custom Color** palette.
2. Click **Del**. The selected color is removed from the Custom Color palette.

CAUTION: Deleting a custom color cannot be undone.

## Controlling Custom Color Tint

The tint control slider lets you specify a tint of the selected custom color. The setting on the tint control slider does not change the definition of the custom color; it only affects the instance of the color applied to the current selection. Changes in tint are displayed in the Paint Style palette Color swatch and the Value Picker.

# Copying Attributes From One Object to Another

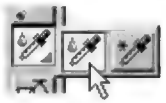
Expression has two tools which allow you to copy color and stroke attributes and apply them to other objects with a couple clicks of the mouse. The **Color Dropper** tool picks up color from one object, or area of an object, so you can drop the color onto another object or area. The **Attributes Dropper** tool copies the stroke and fill attributes from one object to another.

## Copying Colors

In addition to choosing colors from the Color palette you can use the Color Dropper to pick up a color from an object and drop it onto another object.

**To copy color from one area to another:**

1. Click the **Dropper Tools** icon in the **Tools** toolbar and choose the **Color Dropper** tool. The cursor changes to an eye dropper.



The Color Dropper tool.

2. Click-hold on the color you want to copy. The color may be from an object or from the Color Table. The Color Dropper cursor fills, indicating the color has been copied.

Copying a color using the Color Dropper tool.

3. Drag to the object or area you want to color then release the mouse button. The area now displays the new color.

Dropping in the new color.

## Copying Attributes

The **Attribute Dropper** tool allows you to copy one object's paint attributes, (stroke, fill, and colorize settings) to another object. All paint attributes are copied, including stroke type, fill type, color, width, shear angle, etc.

**To copy stroke and fill attributes from one object to another:**

1. Click the **Dropper Tools** icon in the **Tools** toolbar and choose the **Attribute Dropper** tool. The cursor changes to an eye dropper with an asterisk (*).

The Attribute Dropper tool.

2. Click-hold on the object whose attributes you want to acquire. The Attribute Dropper cursor fills, indicating the attributes have been copied.

Click-hold to copy attributes.

3. Drag to the object to which you wish to apply the stroke and fill attributes, then release the mouse button. The object now displays the new stroke and fill.

Release the mouse button to drop the attributes.

## Using Gradients

Expression gives you complete control over gradients. You can select the direction, type of blend, colors used in the blend and the rate of change.

### Applying Gradients

The **Paint Style** palette allows you to select a gradient scheme and apply it to a selected object or path.

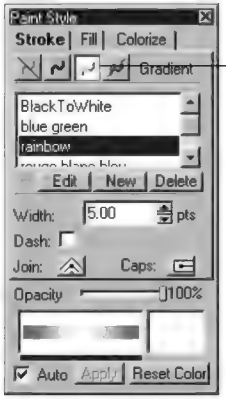
**To select and apply a gradient stroke or fill:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object or path.

2. If the **Paint Style** palette is not displayed, choose **Window menu▸ Paint Style**. The Paint Style palette appears.

3. Click the **Stroke** or **Fill** tab in the **Paint Style** palette. If you want to apply the gradient to a stroke, click the **Stroke** tab. If you want to apply the gradient to an object fill, click the **Fill** tab.

4. Click the **Gradient** icon. The palette changes to reflect gradient related choices.




The Paint Style palette, Gradient Stroke tab.

5. Select a gradient scheme from the scrolling list. You also can create new gradients. For more information on creating gradients schemes, see the next section, ➤"Creating Gradient Color Schemes."

## Controlling Gradients

The **Gradient** tool is used to control the direction and rate of change for a gradient stroke or fill within an object.

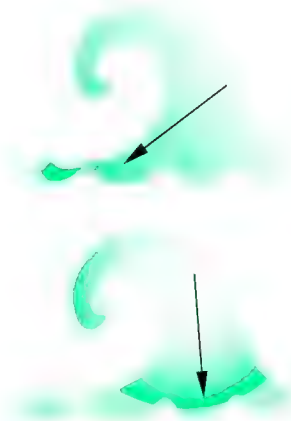
### To apply a default gradient:

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object to which a gradient stroke or fill has been applied.
2. Choose the **Gradient** tool from the **Tools** toolbar.

The Gradient tool.

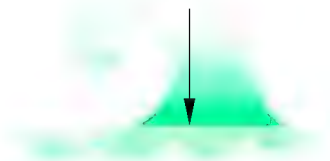
3. Drag across an object to set the gradient direction.

   When you start and end your drag very near opposite edges of the object, the gradient changes equally across the entire object.



Drag from the edge to control the rate of change.

If you start or end your drag away from an edge, the first or last color in the gradient is used to start or complete the gradation.



Drag from the middle of the object to have a larger band of beginning color.

## Creating Gradient Color Schemes

Expression includes a selection of default gradients which are ready to use. You can also edit these gradients or design your own.

➔ **Note:** Gradients are stored globally by the application. This means that editing a gradient affects all objects which use the same gradient pattern. If you want to edit a gradient on a particular object without affecting other objects, create a new gradient and apply it to the object, then edit the new gradient.

### To create a new gradient:

1. If the **Gradient Editor** palette is not displayed, choose **Window menu▸ Gradient Editor**. The Gradient Editor palette appears.

The Gradient Editor palette.

2. Click the **New** button below the Gradient list. The **New Gradient** dialog appears.

You can also create a new gradient directly from the Paint Style palette by choosing **Gradient** from the Paint Style palette's **Stroke** or **Fill** tab and clicking the **New** button below the Gradient list. When you do so, the New Gradient dialog appears, and the Gradient Editor is automatically opened.

The New Gradient dialog.

3. Enter a name for the new gradient, then click **OK**. The new gradient is added to the Gradient list. The initial settings for the new gradient are duplicated from the previously selected gradient.

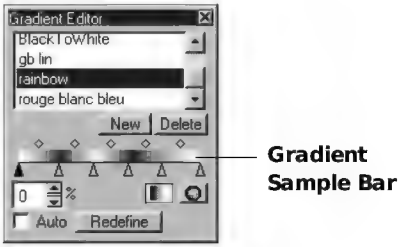
4. Edit the new gradient as described below.

### To edit a gradient:

1. If the **Gradient Editor** palette is not displayed, choose **Window menu▸ Gradient Editor**. The Gradient Editor palette appears.

2. Scroll through the list of gradients to select the one you wish to edit.

3. If it is not already selected (filled) click the left triangle under the Gradient sample bar.




Select the Start Gradient icon.

4. Select or define a color from within the **Color** palette. The color appears in the color selection rectangle at the bottom of the Color palette as well as at the start of the Gradient sample bar.

5. Click the next triangle arrow under the **Gradient** bar to select it.

6. Select or define a color from within the **Color** palette. The **Gradient** bar changes to display your choice.

7. Continue to edit the triangles to define other colors as needed.

8. Drag the triangles to adjust the spacing of the colors. You can also use the input box at the lower right corner of the Gradient palette to precisely set the position of the selected triangle. Enter a number or use the up/down arrows, then press **Tab** or **Return/Enter**.

9. If you want additional colors, click directly below the **Gradient** bar to add additional triangles. Apply colors to the new triangles as needed.

10. To remove a color from a gradient, simply drag its triangle down away from the **Gradient** bar.

11. Drag the diamond indicators above the **Gradient** bar to control the rate of color change between two colors between two adjacent colors.

12. Select the type of gradient by clicking on the **Gradient Type** button to the right of the Gradient bar. You can choose from a linear or radial gradient.

Linear gradient.

Radial gradient.

13. Click **Apply**.

### To delete a gradient:

1. If the **Gradient Editor** palette is not displayed, choose **Window menu▸ Gradient Editor**. The Gradient Editor palette appears.

2. Scroll through the list of gradients to select the one you wish to delete.

3. Click the **Delete** button. The gradient is deleted.

You can also delete a gradient directly from the Paint Style Palette by choosing **Gradient** from the Paint Style palette's Stroke or Fill tab, selecting the gradient you want to delete, and clicking the **Delete** button below the Gradient list.

# Colorizing Objects

Expression provides several ways of controlling the colors used in your strokes. These colors are based on grayscale values. Any changes made affect all selected objects and any new path you draw while the same Skeletal Stroke is selected.

## Why Colorize?

- To shift the color range of a portion or the entire picture as a whole without modifying the individual colors of the objects.
- To tint black and white objects such as clip art.
- To swap the primary color channels to create a different impression.
- To control the color scheme of a multi-colored Skeletal Stroke.

Experiment with the Paint Style palette's Colorize tab. Use it to change the mood of your artwork, to change individual instances of a stroke or to restrict your color to a specific range.

For example, you want to create an image with a school of fish. The individual fish is created using three or four colors. Make the fish into a Multi-view stroke so each instance may be a slightly different view. Then, select one copy and adjust the Colorize tab to give it a distinct set of colors. The colors retain the value (light/dark) of the original but now reflect a different color scheme. Colorize each fish in your school to quickly create a school of related but different instances.

## How to Colorize

Expression offers two methods of colorizing:

- Foreground/Background which applies to Skeletal Strokes only.
- Three Primaries plus Background which applies to any object.

## Foreground/Background Mode

When working with a Skeletal Stroke that includes two colors, such as a Natural-Media brush stroke, control the colors using the Foreground/Background Mode.

The foreground and background colors for Skeletal Strokes are applied based on value. Black areas are replaced by the foreground color while white areas are replaced by the background color. Gray areas (between black and white) are replaced by appropriate hues based on the balance of black and white.

In strokes with only black and white you see only the foreground and background color. In strokes with grays you see color(s) assigned to the particular grayscale value. A stroke with two colors, but little contrast, say black and forest green, shows very little difference between the foreground and background color.

When you have a fully colored Skeletal Stroke and use foreground/background mode to colorize the stroke, the intensity (or lightness) of the colors are taken to get a color between the foreground and background colors. The original hue of the colors is ignored; only the intensity value is used.

The most intense (lightest) areas receive the background color. The least intense (darkest) areas receive the foreground color. All areas with intensity between the most intense and least intense areas are assigned colors between the foreground and background based on their relationship to the two extremes.

### To apply color using the Foreground/Background mode:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object to be colorized.
2. If the **Paint Style** palette is not displayed, choose **Window menu▸ Paint Style**. The Paint Style palette appears.
3. Click the **Colorize** tab. The palette changes to reflect the Colorize options.

4. Click on the **Fg/Bg Mode** button. Two squares, appear in the palette, representing the foreground color (upper left) and the background color (lower right).

Paint Style palette, Colorize tab, Foreground/ Background mode.

5. If the **Color** palette is not displayed, choose **Window menu▸ Color**. The Color palette appears.

6. Click within the Foreground swatch and select or define a color from the Color palette. The color is applied to the Foreground swatch.

7. Apply a color to the background swatch the same way.

8. Click **Apply**. The new colors are applied to the selected object.

**Note:** Colorizing a Skeletal Stroke using the Colorize tab has exactly the same effect as editing the Stroke's primary and secondary colors in the Color palette.

## Primary Colors Substitution Mode

The Foreground/Background mode is ideal for colorizing grayscale strokes. Since most of Expression's Natural-Media Strokes are designed in grayscale, this mode is very useful. However, it does not work as well for colorizing multi-colored strokes, since it replaces all of the original colors with just two.

To alter the colors of multi-colored strokes, you can use the Primary Colors Substitution mode. By allowing you to substitute different colors for the standard primaries, this mode enables you to apply subtle or dramatic color shifts to one or more objects in your illustration.

The Primary Colors Substitution mode allows you to selectively substitute the primary colors in a Stroke's color model to alter the appearance of the colors in the Stroke. You can work in the Subtractive color model (the default) where the primaries are Cyan, Magenta and Yellow, or the Additive color model, where the primaries are Red, Green and Blue.

Substituting the primaries in the Subtractive color model is like substituting different colored inks for Cyan, Magenta, and Yellow in the printing process. Substituting the primaries in the Additive color model is like changing the colors of the light emitted by the computer screen (or changing the color of the phosphors used in the CRT).

Since most artists find the concept of substituting inks simpler than the concept of altering the CRT, this manual explains the primary color substitution process in terms of the Subtractive model. The interface works identically for the Additive model; only the actual primary colors are different.

### Combined Color Substitution

In addition to altering colors on an object by changing the colors used for the primaries, you can alter the color by changing the color of the intersection of the three primary color circles. This way you change the whole color spectrum toward the new color you have introduced. When you change the intersection of the three circles Expression actually changes the three primary colors to primaries that create that color.

➔ **Note:** The combined color represents the maximum intensity color possible with the new primaries when the additive models is chosen; or the minimum intensity color possible when the subtractive model is chosen. Therefore selecting black as the combined color under the additive model would give three blacks as primaries, turning every color black on such substitution. Similarly,

selecting white as the combined color under the subtractive model would give three whites as primaries, turning every color white.

### Background Color Substitution

The background color, represented by a square in the Colorize tab affects how color is seen. It is equivalent to changing the color of the paper the object is printed on, except each object in your image could have a different background color. Changing the background color does not change the primary colors but does change the appearance of the object.

For a real-world example of colorizing objects with the primary substitution method, see the **Expression Creative Techniques** guide.

**To apply color using the subtractive color model:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object to be colorized. This mode only works for Skeletal Strokes.
2. If the **Paint Style** palette is not displayed, choose **Window menu▸ Paint Style**. The Paint Style palette appears.
3. Click the **Colorize** tab. The palette changes to reflect the Colorize options.
4. Click on the **Additive Model** or **Subtractive Model** button. Three overlapping circles and a square appear in the palette. The circles display the primary ink colors. The square represents the background upon which the inks are placed.

Paint Style palette, Colorize tab, Additive model.

Changing one of the color circles represents changing an ink color. The standard inks, Cyan, Magenta and Yellow can be substituted with any other color to change the overall color scheme.

5. If the **Color** palette is not displayed, choose **Window menu▸ Color**. The Color palette appears.
6. Click to select one of the primary color circles or the intersection of all three circles, then select or define a color from within the Color palette. The color appears in the selected area.
7. Apply a color to the other primary color swatches the same way.
8. Click **Apply**. The new colors are applied to the selected object.

## Removing Colorization

If you decide later on that you want a colorized object to revert to its original colors, you can reset the colorization option.

**To reset the color:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select the colorized object.
2. If the **Paint Style** palette is not displayed, choose **Window menu▸ Paint Style**. The Paint Style palette appears.
3. Click the **Reset Color** button. This button is only available if colorization has been applied to the selected object. The original color is restored to the selected object.

## Setting Colorize Preferences

Replacing colors with the Color Dropper tool is normally a straightforward process—the color you pick up is simply dropped wherever you release the mouse. However, when you try to replace one of the colors in a Stroke which has previously been colorized, the process is sophisticated.

Expression cannot simply drop the color into the Stroke because the color you are dropping may not even exist within the Stroke's substituted color model.

Instead, Expression must do one of two things. By default, Expression resets the colors of the Stroke before dropping the new color in. This ensures that the color you pick up and drop with the Color Dropper is the color you actually see in your document. However, resetting the colors often drastically alters the appearance of the rest of the Stroke.

If you prefer, Expression can instead leave the Stroke's substituted colors intact. In this case, however, the color you drop is not the color you see in your document—it is colorized along with the rest of the Stroke.

**To change the colorize preferences:**

1. Choose **File menu▸ Preferences**. The Preferences dialog appears.
2. In the **Options** tab, select or de-select the **Color Dropper: resets primaries** checkbox.
3. Click **OK**.

## Setting Color Calibration

Colors that display on the computer screen can only be approximated by printed color and vice-versa. To get your printed output as close as possible to the colors you see on screen you must calibrate your monitor. If you are using a color printer use Expression's Color Match feature to calibrate your monitor to your printer.

The computer uses a mix of three basic colors, red, green and blue, to generate the full range of colors displayed on your monitor. Printers, however, use a mixture of four basic ink colors, cyan, magenta, yellow and black, to create a similar range of colors. Because these two methods are fundamentally different a perfect match between what you see on screen and what you see printed is often impossible.

After calibrating your system with Expression's Color Match feature to match the setting you have in Fractal Design Painter, Adobe Illustrator, Adobe Photoshop or CorelDRAW!, you can print your Expression artwork from one of those applications and be assured that the color will still print out as true as possible.

Of course, the best color matching can be achieved on 24-bit monitors which can display millions of colors. Anything less than 24-bit means the colors will need to be dithered or approximated. A 24-bit monitor

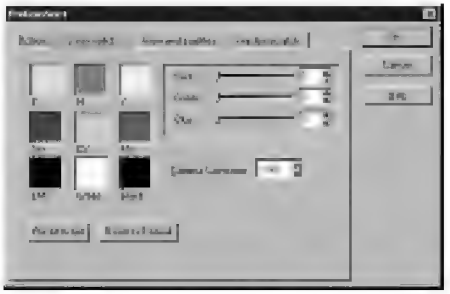
offers you the largest number of colors to choose from. 8-bit or 16-bit color monitors can not give you as large a selection of colors.

The first step in color calibration is to acquire a printed sample of the standard color combinations, known as a progressive color bar. If you are taking your color image to a service bureau for output, the service bureau should supply you with this tool. If you have a color printer in your office you should use the progressive color bar supplied with the printer. The progressive color bar contains color swatches of the following colors:

cyan, magenta, yellow, magenta/yellow, cyan/ yellow, cyan/magenta, cyan/ magenta/yellow, white and black.

### To calibrate your color monitor:

1. Choose **File menu▸ Preferences**. The Preferences dialog appears.
2. Click the **Color match** tab. The dialog displays the color match selections.



The Preferences dialog, Color match tab.

3. In the gamma field, enter the same target gamma setting you used in Fractal Design Painter, Adobe Photoshop, Adobe Illustrator or CorelDRAW! to calibrate your monitor in that application.

   If you have not calibrated your monitor in one of those applications, leave the gamma setting at the default 1.8. If you are using a third party monitor calibration utility, type in your gamma setting from that application.

4. Hold the color printer's progressive color bar up to the monitor and adjust the RGB sliders to match the screen colors as closely as possible to the printed colors.
5. If you are using a paper color other than white, set the color patch labeled "White" to match the color of your paper. This will compensate for the color of your paper and better match the colors you see on your screen.
6. Click **OK**.

   To return the Color Match settings to the default setting click the **Reset to Default** button. To return to the last settings, prior to recent changes, click the **Reset to last** button.

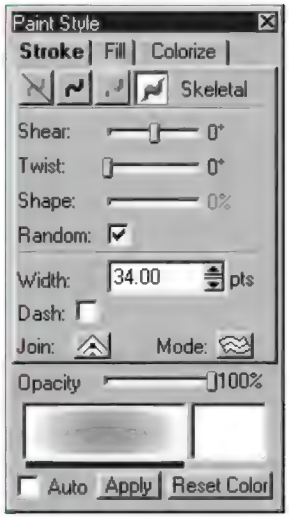
# 5

# Applying Strokes and Fills

While a path is the basic component in Expression, the magic of Expression is how you paint the path. The appearance of an object depends on three parameters: the path, the stroke and the fill. ➢Chapter 3, "Creating Paths," describes how to create a path. This chapter explains Expression's stroke and fill techniques, which bring character to your path.

## Applying Paint: The Paint Style Palette

You paint a path by specifying two main attributes: stroke and fill. The stroke you set determines the appearance of an object's path(s). The fill you select determines the appearance of the area enclosed by the path(s). You control these attributes by using the **Paint Style** palette.



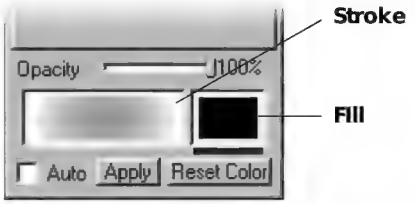

The Paint Style palette.

When no object is selected the Paint Style palette displays the current attributes. These are the attributes applied to the last selected object or attributes to be applied to the next object created.

When a single item is selected, the Paint Style palette displays that object's attributes. When multiple objects are selected the Paint Style palette displays those attributes which are common to all selected objects. If a particular attribute differs between the selected objects, that field is blank or displays a special item (i.e., a question mark) to indicate there is a difference.

Paint Style palette when two or more objects are selected with different attributes.

The preview windows near the bottom of this palette display the selected stroke on the left and the selected fill on the right.




Paint Style palette color preview windows.

### Using Apply and Auto Apply

You can set Expression to automatically apply any attributes selected in the Paint Style palette by selecting the **Auto** box in the lower left of the Paint Style palette.

When **Auto** is selected, all changes made are automatically applied to the selected path(s). Otherwise, after making changes in the **Paint Style** palette, click the **Apply** button to apply the changes to your path(s).

➔ **Note:** For the purposes of this manual, we assume **Auto** is not selected.

### Controlling Opacity/ Transparency

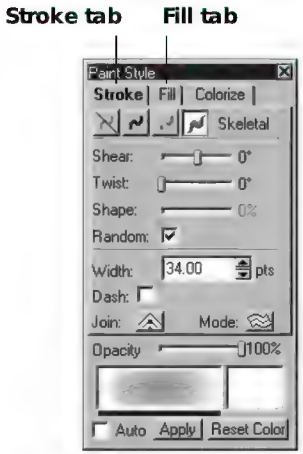
Opacity refers to the ability of material to block light, which is the inverse of transparency. Drag the Opacity slider near the bottom of the Paint Style palette to change the opacity of the selected object(s).

With Opacity set to 100%, your object is opaque and you can not see through it. Set Opacity to 0% to make the object completely transparent and invisible.

➔ **Note:** Since many file formats do not support Opacity, you need to consider your output plans when using this feature. For more information on printing, see ➤Chapter 7, "Printing."

### Using the Paint Style Palette Tabs

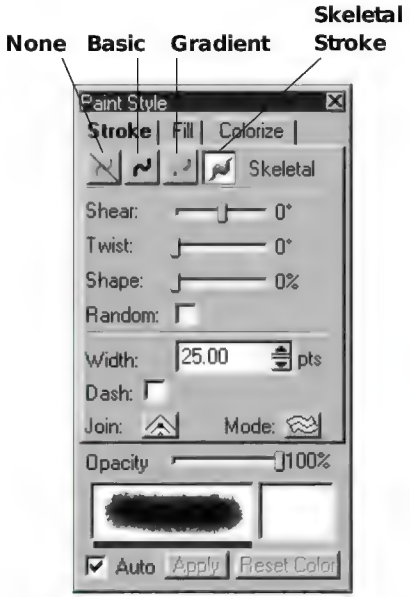
Use the tabs at the top of the Paint Style palette to activate the controls for the attribute you wish to edit. To select **Stroke**, **Fill** or **Colorize**, click the appropriate tab. For information on using the Colorize tab, see ➤"Colorizing Objects" in Chapter 4, "Using Color."




The Paint Style palette, Stroke and Fill tabs.

## Changing Stroke Attributes

Expression allows you to choose from several types of strokes: None, Basic, Gradient or Skeletal. Each stroke type has attributes specific to that type. The information within the tab changes to reflect the type of stroke selected. Click to select the type of stroke you want to apply.




The Paint Style palette, Stroke tab.

**None** No stroke is displayed so there are no specific parameters.

**Basic** Path is drawn with a solid color.

**Gradient** Path is drawn with color changing gradually from a starting color to an ending color.

**Skeletal Stroke** Path is drawn with the Skeletal Stroke chosen from the **Stroke Warehouse** palette.

### Applying No Stroke

When **None** is selected as your stroke from the Paint Style palette, no stroke is displayed on the selected object. If you set both stroke and fill to **None**, no image displays. With stroke set to **None** and Fill set to **Color**, **Gradient** or **Pattern** you see the color or pattern with no outline.

Examples of objects with a fill, but no stroke.

## Applying Basic strokes

This is similar to the standard stroke you use in Adobe Illustrator or CorelDRAW!. The stroke is displayed as a solid color, set to the width you prefer. Dashed lines can be created using a basic stroke. You can also specify corner joint type and end caps to be used.

### Applying Color

Color can be applied to Basic, Gradient and Skeletal strokes. The method for applying color to each stroke varies. This section discusses applying color to Basic strokes.

For additional information on colorizing Skeletal Strokes, see ➤"Colorizing Objects" in Chapter 4, "Using Color."

**To change the color of a basic stroke:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.
2. If the **Paint Style** palette is not displayed, choose **Window menu▸ Paint Style**. The Paint Style palette appears.
3. Click the **Stroke** tab. The attributes for strokes appear in the palette.
4. Click the **Basic** icon. The palette changes to display the Basic stroke parameters.
5. If the **Color** palette is not displayed, choose **Window menu▸ Color**. The Color palette appears.
6. Select or define a color from within the **Color** palette. The color appears in the color selection rectangle at the bottom of the Color palette as well as in the Paint Style palette.

   For detailed instructions on picking a color, see ➤Chapter 4, "Using Color."

The color selected in the Color palette appears in the Paint Style palette.

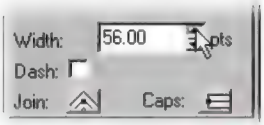
7. Click **Apply**.

### Changing the stroke Width

Expression allows you to set the width (in points) of any Basic, Gradient or Skeletal Stroke.

**To change the width of a stroke:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.
2. Click the **Stroke** tab in the **Paint Style** palette. If the Paint Style palette is not displayed, choose **Window menu▸ Paint Style**.
3. In the **Width** entry box, highlight the current number displayed and enter a new number. You can also click the up and down arrows to increase or decrease the width in increments of one point. Drag the up/down arrows to adjust the width more quickly.
4. Click **Apply**.



stroke width examples.

### Creating Dashes

Expression allows a dash pattern to be specified to a stroked path with each dash being an instance of your stroke. This works the same way for Basic, Gradient and Skeletal strokes.

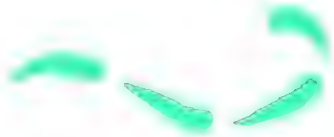
**To create dashed line:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.
2. Click the **Stroke** tab in the **Paint Style** palette. If the Paint Style palette is not displayed, choose **Window menu▸ Paint Style**.
3. Select the **Dash** check box.
4. Enter a pattern of numbers indicating the size and interval for the dashes. For example, enter 20 10 to create a line that has dashes of 20 points separated by spaces of 10 points.

   You can create more complex dash patterns by entering sequences of more than one or two numbers.
5. Click **Apply**.

Dashed line using 20-10 interval.

Dashed line using 10, 20, 30, 40 intervals.



Dashed line using 90, 10 intervals.

### Changing Corner Attributes

The **Join** buttons give you the ability to select how Expression applies a stroke to a corner.

**To change corner appearance:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.
2. Click the **Stroke** tab in the **Paint Style** palette. If the Paint Style palette is not displayed, choose **Window menu▸ Paint Style**.
3. Click on a **Join** method button. You have the following choices:

Miter.

Bevel.



Round.

### Changing End Cap Attributes

The **Caps** buttons define the shape of the ends of open paths or for dashed segments. Caps do not apply to Skeletal Strokes.

**To change the endpoint appearance:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.
2. Click the **Stroke** tab in the **Paint Style** palette. If the Paint Style palette is not displayed, choose **Window menu▸ Paint Style**.
3. Click a **Caps** method button. You have the following choices:

Flat cap.

Round cap.

Square cap.

### Applying Gradient Strokes

When you select **Gradient** as your stroke, Expression displays the stroke as a Basic stroke but, instead of a solid color, the color is a simple or complex gradient, changing gradually from one specified color to another.

Gradient strokes are set in the same manner as Gradient fills. For more information on gradients, see ➤"Using Gradients" in Chapter 4, "Using Color."

### Applying Skeletal Strokes

The core of Expression is the Skeletal Stroke. In most graphic software when you draw a path you can set certain characteristics of the path, such as color or fill.

Some software allows you to use tools that mimic real world art tools, such as a calligraphy pen or a dry brush. With Expression you can go far beyond these standard characteristics.

Expression gives you a Natural-Media feel, with the advantages of resolution independent artwork. You can assign a path characteristics of any other path or groups of paths. For example, you may create a path or group of paths that create an image of a fish. You can use that fish image to create a Skeletal Stroke which you can then apply to a new path. The fish image follows the shape of the path to which it is assigned.

Applying Skeletal Strokes.

You can also control the direction of the Skeletal Stroke and its width.

Assign various attributes to your Skeletal Strokes.

### How is a Skeletal Stroke Created?

Each Skeletal Stroke is contained in its own individual reference frame or stroke definition box. The stroke may be as simple as a dot or as complex as a sailing ship but once it has been defined as a stroke you can apply it as a characteristic to any path you draw.

The stroke definition box becomes the reference for the stroke. As it is pulled along the path, the artwork within the stroke is deformed based on the distortion of the box. You can even twist and skew the stroke.

Twisted and skewed strokes.

For information on defining a stroke see ➤"Creating and Editing Skeletal Strokes," later in this chapter.

### Applying a Skeletal Stroke

Just like any other type of stroke (Basic or Gradient), a Skeletal Stroke can be applied to any path. You can choose from any of the Skeletal Strokes in the Stroke Warehouse palette.

"Painting" with a Skeletal Stroke is very simple—just choose a stroke from the Stroke Warehouse palette and draw with the drawing tool of your choice. Instructions for applying a Skeletal Stroke to an existing path appear below.

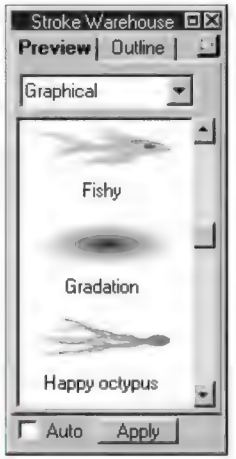
Once you have applied a Skeletal Stroke, the Paint Style palette allows you to set several special Skeletal Stroke parameters, in addition to the standard stroke parameters. For additional information in applying attributes, see ➤"Setting Skeletal Stroke Parameters," later in this chapter.

**To apply a Skeletal Stroke:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object or path.

A simple path.

2. If the **Stroke Warehouse** palette is not displayed, choose **Window menu▸ Stroke Warehouse**. The Stroke Warehouse palette appears.




Select a stroke from the Stroke Warehouse palette.

3. Click any stroke you prefer from the **Stroke Warehouse** palette. The controls and the preview in the Paint Style palette are updated to reflect your choice.

4. In the **Paint Style** palette, click **Apply**.

The selected stroke is applied to the selected path.

## Using Quick Strokes

This feature can be used to assign single keystrokes to your favorite Skeletal Strokes. Instead of returning to the Stroke Warehouse palette each time you need to change your stroke, you simply use a keystroke to switch between strokes.

### To set a quick keystroke:

1. Click on a stroke in the **Stroke Warehouse** palette.

2. Choose **Stroke menu▸ Set As Quick Stroke** to display the sub-menu.

3. From the sub-menu, choose the stroke number you wish to assign to the selected stroke. You can choose a number from 1 to 9. By default, the number 0 is assigned to a basic stroke.

You can also quickly assign quick strokes by selecting a stroke from the Stroke Warehouse palette then press **Command/Ctrl**+any number between 1 and 9. The number your select is the quick key number assigned to that stroke.

### To use a quick keystroke:

1. Type the **Quick Stroke number**. The selected stroke becomes highlighted in the Stroke Warehouse palette and becomes the active stroke in the Paint Style palette.

   You can also choose **Stroke menu▸ Use Quick Stroke** and highlight the appropriate stroke.

## Setting Skeletal Stroke Parameters

When you select a Skeletal Stroke the object is drawn based on the stroke you select. In addition to Width, Dash and Join, described earlier, you can set Skeletal Stroke specific parameters including Mode (Ribbon or Sausage), Shear, Twist and Shape.

For information on creating a new Skeletal Stroke, see ➤"Creating and Editing Skeletal Strokes," later in this chapter.

For information on changing the colors in a Skeletal Stroke, see ➤"Colorizing Objects" in Chapter 4, "Using Color."

### Changing the Width of the Skeletal Stroke

You can control the width of a Skeletal Stroke as you can for a Basic or Gradient stroke; by using the **Width** entry box in the Paint Style palette. In addition, you can also control the width by manipulating the Shear/Width handle assigned to each Skeletal Stroke.

#### To manually change the width of a Skeletal Stroke:

1. Using any of the **Selection** tools from the **Tools** toolbar, select the object.




A simple object with Skeletal Stroke.

2. Drag the Shear/Width handle up or down to change the width. Holding down the **Shift** key constrains the change so only the width is adjusted. Otherwise, the Shear is also adjusted. For more information on Shear, see ➤"Shearing the Stroke."

Changing the width of your Skeletal Stroke.

### Changing the Mode

Expression offers two ways to apply a stroke to a path: **Sausage** or **Ribbon**. The default mode is Sausage but you can change the mode simply by clicking on the mode icon that you prefer.

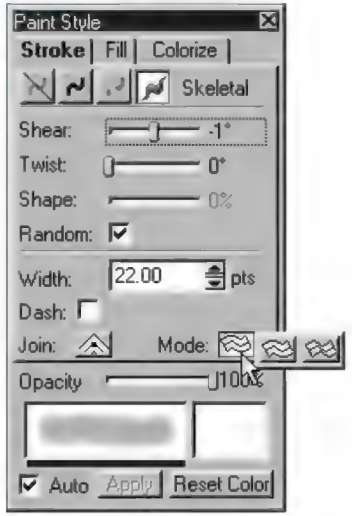
Sausage mode displays a more literal path with the Skeletal Stroke distorted accordingly. The Skeletal Stroke remains perpendicular to the path, turning as the path curves an turns.

Ribbon mode creates an image something like what you get with a calligraphy pen. The Skeletal Stroke remains oriented along the Y axis or the paper as it was originally defined.

#### To change the Skeletal Stroke mode:

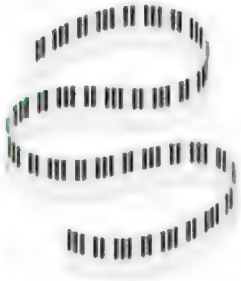
1. Using any of the **Selection** tools from the **Tools** toolbar, select an object to which a Skeletal Stroke has been applied.

2. Click the **Stroke** tab in the **Paint Style** palette. If the Paint Style palette is not displayed, choose **Window menu▸ Paint Style**.




The Paint Style palette, Skeletal Stroke tab.

3. Click on a **Mode** button.



Ribbon mode.

Sausage mode.

4. Click **Apply**.

### Shearing the Stroke

Shear refers to the angle at which the stroke is drawn. Imagine the stroke shape as being on a clear piece of fabric. By default the clear fabric is a rectangular shape, with right angles. Using Shear you can pull that rectangular shape into a parallelogram thus distorting the stroke.

**Note:** Do not confuse this ability to shear the Skeletal Stroke with the transformation handles on the bounding box of a selected object. The transformation handles on the bounding box affect the path. The Shear/Width handle on the object itself and the **Shear** slider in the **Paint Style** palette affect the Skeletal Stroke. For information on shearing the path, see ➤"Shearing Objects" in Chapter 6, "Arranging and Editing Objects."



Before shear.



After shear.

In Sausage mode the Shear angle is relative to the particular Skeletal Stroke. In Ribbon mode the Shear angle is based on the global Y axis or the paper on which the stroke is placed.

Control the shear by using the **Shear** slider or the Shear/Width handle that is assigned to each Skeletal Stroke.

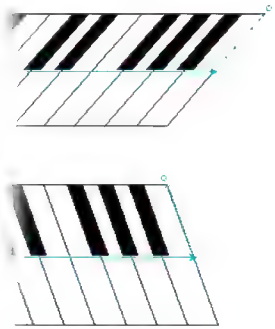
**To adjust the shear:**

1. Using any of the **Selection** tools from the **Tools** toolbar, select an object to which a Skeletal Stroke has been applied.

A simple object with Skeletal Stroke.

2. Click the **Stroke** tab in the **Paint Style** palette. If the Paint Style palette is not displayed, choose **Window menu▸ Paint Style**.

3. Drag the **Shear** slider.



40° shear and -25° shear.

### To manually change the shear of a Skeletal Stroke:

1. Using any of the **Selection** tools from the **Tools** toolbar, select an object to which a Skeletal Stroke has been applied.

A simple object.

2. Drag the Shear/Width handle to the left or right to change the shear.

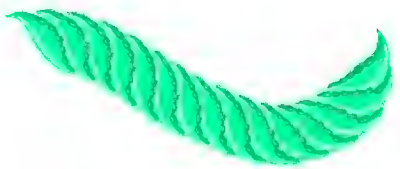
Changing the shear of your Skeletal Stroke.

## Twisting a Stroke

You can twist your Skeletal Stroke by dragging the **Twist** slider to set the number of turns you want.

### To twist a stroke:

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.



A simple object.

2. Click the **Stroke** tab in the **Paint Style** palette. If the Paint Style palette is not displayed, choose **Window menu▸ Paint Style**.

3. Drag the **Twist** slider.

280° twists and 1,080° twists.

## Setting the Shape of a Multi-view Stroke

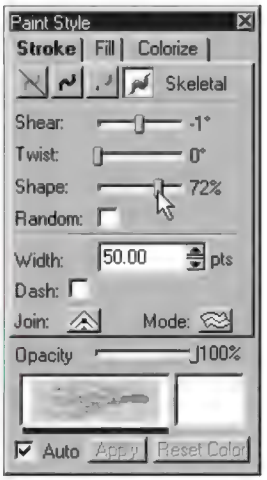
Whereas ordinary Skeletal Strokes are defined from a single picture, Multi-view strokes are defined from a sequence of different (but closely related) pictures. Expression treats these pictures as different views of a single stroke, any of which may be used each time you apply the stroke. For more information on Multi-view strokes, see ➤"Creating Multi-view Strokes," later in this chapter.

Each view is assigned a shape parameter between 0% and 100%, which allows you to specify which view to use. Because Expression automatically generates "in-between" views from the original views in the Stroke definition, a Multi-view stroke can have a wide range of appearances.

By dragging the **Shape** slider in the Paint Style palette, you can specify which view of the stroke you want to use. Alternatively, if you enable the **Random** checkbox, Expression randomly chooses a view. The Shape slider and the Random checkbox are enabled only when the Paint Style palette contains a Multi-view stroke (Multi-view strokes are marked in the Stroke Warehouse with a blue dot).

### To set the shape of a Multi-view Stroke:

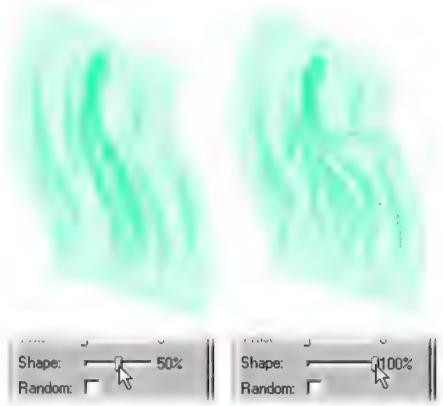
1. Using any of the **Selection** tools from the **Tools** toolbar, select an object to which a Multi-view stroke has been applied.
2. If the **Paint Style** palette is not displayed, choose **Window menu▸ Paint Style**. The Paint Style palette appears.
3. Click the **Stroke** tab. The attributes for strokes appear in the palette.




Using the Shape slider.

4. Drag the **Shape** slider to select a percentage value. 0% (the default setting) specifies the stroke's first view; 100% specifies the last view.

   Each value in between specifies a particular view, which (depending on the stroke) may be a view from the original Stroke definition or a view automatically generated by Expression.




The effects of the Shape slider.

### To specify a randomly chosen shape:

1. Using any of the **Selection** tools from the **Tools** toolbar, select an object to which a Multi-view stroke has been applied.
2. If the **Paint Style** palette is not displayed, choose **Window menu▸ Paint Style**. The Paint Style palette appears.
3. Click the **Stroke** tab. The attributes for strokes appear in the palette.

4 Enable the **Random** checkbox below the **Shape** slider. The Shape slider is now disabled, and a value is randomly generated.

Using the Random setting.

## Applying Fills

Expression allows you to choose from four types of fill; **None**, **Solid**, **Gradient** and **Pattern**. The currently active fill is displayed and can be changed using the Paint Style palette's Fill tab.

The Paint Style palette tabs.

Regardless of which fill type you choose, the Fill rule allows you to define which areas of your object are filled. There are two methods which can be used when applying a fill to complex objects:

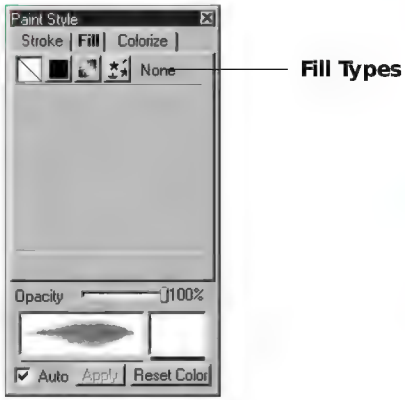
- Non-Zero Winding Rule
- Even-Odd Rule

For more information on the Fill rules, see ➤"Filling Complex Shapes" in Chapter 3, "Creating Paths."

### To select a fill:

1 Using the **Object Selection** tool from the **Tools** toolbar, select an object.

2 Click the **Fill** tab in the **Paint Style** palette. If the Paint Style palette is not displayed, choose **Window menu▸ Paint Style**.




The Paint Style palette, Fill tab

3 Click a Fill Type icon to select a fill type. You have four fill options:

**None** No fill displayed. No parameters to set

**Solid** Fill is a solid color.

**Gradient** Fill is drawn with color changing gradually from a starting color to an ending color.

**Pattern** Fill is drawn with a repeating pattern.

## Applying Solid Fills

When you select **Solid Fill**, Expression displays the fill as a solid color.

**To apply a solid fill:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.

Select an object

2. Click the **Fill** tab in the **Paint Style** palette. If the Paint Style palette is not displayed, choose **Window menu▸ Paint Style**.

3. Click the **Solid** fill type icon.

The Solid fill type icon.

4. Set the color by clicking the preferred color in the **Color** palette. The display at the bottom right of the **Paint Style** palette updates.

   For more information on applying color, see ➤Chapter 4, "Using Color."

5. Click **Apply**.

Applying a solid fill.

## Applying Gradient Fills

When you select **Gradient Fill**, Expression displays the fill as a simple or complex gradient, changing gradually from one selected color to another.

Gradient fills are set in the same manner as Gradient strokes. For more information on gradients, see ➤"Using Gradients" in Chapter 4, "Using Color."

Linear and radial gradient fill.

## Applying Pattern Fills

Patterns are tiled repetitions of pictures that are used as Expression fills. Expression presents you with a selection of predefined fills but you can also create your own. You can create a pattern out of anything you can draw.

### To select a predefined pattern:

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.

Select an object

2. Click the **Fill** tab in the **Paint Style** palette. If the Paint Style palette is not displayed, choose **Window menu▸ Paint Style**.

3. Click the **Pattern** fill type icon.

The Pattern fill type icon

4. Scroll through the list of patterns. The selected pattern is previewed in the lower right of the Paint Style palette.

5. Click to select the pattern you prefer.

6. Click **Apply**.

Applying a pattern fill

## Creating a New Pattern

Expression's **Pattern Definition** tool allows you to create a pattern from any artwork in your Expression document. You simply drag a marquee around the artwork to create a Pattern Definition Box. The Pattern Definition Box is a special type of object which allows you to define the contents of a single pattern tile.

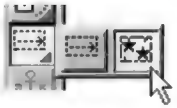
By transforming the Pattern Definition Box with the transformation tools, you can create a pattern whose tiles are skewed or rotated. This often results in a pattern with less obvious seams. Once you have adjusted the Pattern Definition Box to your liking, you define the pattern by clicking a button. After you define a pattern, it becomes accessible from the list in the Paint Style palette.

### To define a new pattern:

1. Create or open a basic tile picture in the Expression workspace.

Create or open a tile pattern.

2. Click the **Definition Tools** icon in the **Tools** toolbar and choose the **Pattern Definition Box** tool.

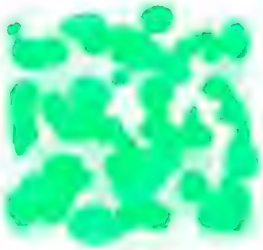


The Pattern Definition Box tool.

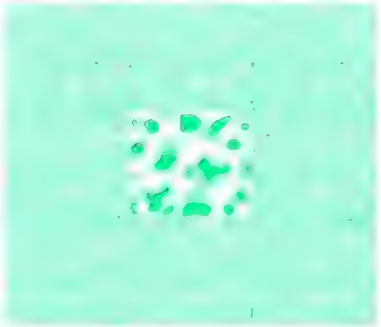
3. Drag a marquee around the area to be turned into a pattern. The size of the marquee you draw defines the tile size and controls the spacing between repetitions. For more space, drag the marquee larger. For less space leave less free space within the marquee.

   A marquee that is smaller than the object itself creates overlapping tiles.

When you release the mouse, a pattern definition box is created. This box allows you to further adjust the pattern tile and displays a preview of the pattern.



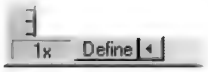
Select the area to define the pattern boundaries.



Release the mouse and a pattern definition box is created.

4. Using the **Transformation** tools from the **Tools** toolbar or the selection handles on the pattern definition box, rotate, skew, scale, etc., the pattern definition box as needed.

5. Click the **Define** button in the lower left corner of the Pattern Definition window to define the pattern.




Click Define to define the pattern.

6. Enter a name for the new pattern and click **OK**. The new pattern is added to the list of available patterns, ready for you to use.

### Controlling the Pattern During Transformation

Expression allows you to set a preference to determine whether pattern fills are transformed (moved, scaled, rotated, or sheared) along with the objects to which they are applied.

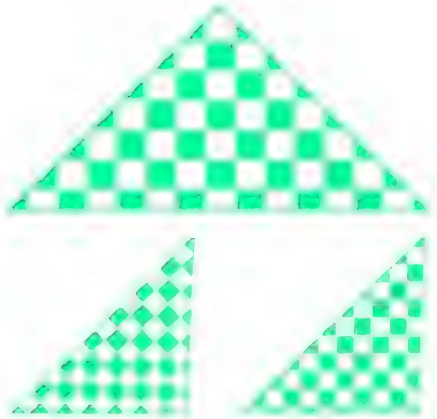
When the **Transform Patterns** option is enabled, a pattern is treated as part of the object to which it is applied and is subsequently affected when the object is transformed. When this option is disabled, the object is like a window, simply revealing the pattern. Transforming the object may affect which part of the pattern is revealed, but the pattern itself is not transformed.

**To set the pattern to transform with object:**

1. Choose **File menu▸ Preferences**. The Preferences dialog appears.

2. Click the **Options** tab.

3. Select the **Transform Patterns** check box. From now on, transformations applied to objects with a pattern fill are applied to the pattern as well. This option can be turned on and off in an editing session and the effect is accumulative.



Objects with and without Transform Patterns.

### To remove a pattern from the pattern list:

1. Click the **Fill** tab in the **Paint Style** palette. If the Paint Style palette is not displayed, choose **Window menu▸ Paint Style**.
2. Click the **Pattern** fill type icon.

The Pattern fill type icon.

3. Select a pattern from the pattern list.
4. Click the **Del** button.

### To edit patterns:

1. Click the **Fill** tab in the **Paint Style** palette. If the Paint Style palette is not displayed, choose **Window menu▸ Paint Style**.
2. Click the **Pattern** fill type icon.
3. Select a pattern from list.
4. Click **Edit**. Make changes as needed.
5. Click the **Define** button in the lower left corner of the Pattern Definition window to define the pattern. A dialog appears prompting you to enter a name for the pattern.
6. Enter a name for the pattern. If you save the pattern with the same name as an existing pattern, the new pattern overrides the exiting, and all objects to which the pattern is applied are changed. If you save the pattern under a different name, the original pattern is left unchanged.
7. Click **OK**.

To rename a pattern, save it with a different name, then delete the original pattern.

## Pattern Storage

All patterns are stored in a single pattern file within the main Expression directory. In addition, each Expression document file contains the pattern definitions for all patterns used in the document.

If your pattern list becomes cluttered, you can simply delete patterns you use infrequently. Since pattern definitions are also kept within individual Expression documents, you don't have to worry about missing patterns when you re-open a file.

## Patterns Within Strokes

When a stroke definition includes an object with a pattern fill, the pattern is re-applied to each instance of the stroke. Therefore, the pattern is not deformed with the contents of the stroke.

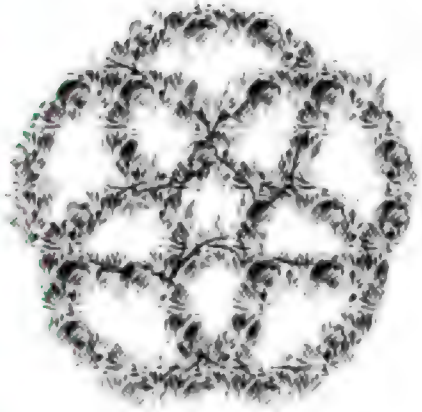
## Patterns and Color Substitution

When you change the primary colors of an object whose fill or Skeletal Stroke uses a pattern, the colors of the pattern are affected along with the rest of the object's colors. However, the individual colors within a pattern cannot be edited on an object-by-object basis.

## Hatching

With Expression you can mimic and extend the traditional pen and ink shading technique known as hatching. Hatching generates a pattern of strokes whose widths vary based on the contrasting lightness/darkness of the source imagery you provide.

The shape, thickness and relative placement of individual lines within the hatching pattern determine how the object is perceived. Hatching can indicate depth or curvature as well as distance and texture. Hatching is one of the features that gives Expression its exciting Natural-Media feel.



An example of hatching.

### Applying Hatching

Hatching is applied to a path, which defines the boundary of the region to be hatched.

Any imagery which falls within this region, including the fill of the path itself and any objects which overlap it, is used to generate the hatching. Often, simple gradients or blends make the best source imagery for hatching.

The widths of the individual hatching strokes depend on the varying lightness and darkness of the source image. Lighter areas are hatched with thin strokes, darker areas with thicker strokes.

In addition to selecting a path, you must choose your hatching pattern. Hatching patterns are specialized patterns composed of strokes. Variations in the hatching are achieved by varying the width and parameters of these component strokes at the time of application according to the source image.

Expression includes several patterns designed for hatching (they all have "hatch" or "hatching" in their name). You can also design your own patterns for hatching. Hatching patterns are defined and stored like any other pattern, and are kept in the same list. In fact, you can use any pattern for hatching, although patterns not specifically designed for hatching are not likely to produce good results. For a lesson in designing a hatching pattern, see the **Expression Creative Techniques** guide.

### Hatching Results

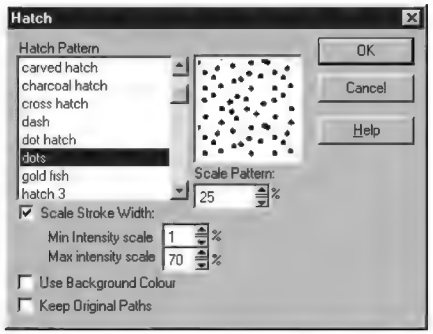
After hatching has been applied the boundary path is deleted by default. Any other objects used as source imagery are unaffected. The final result of a hatching operation is simply a group of strokes.

**To apply hatching:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.

Select an object.

2 Choose **Objects menu▸ Hatch**. The Hatch dialog appears.




The Hatch dialog.

3 Choose a hatch pattern from **Hatch Pattern** list.

4 Scale the pattern by entering a value in the **Scale Pattern** entry box or click on the up and down arrows. This option can be used to enlarge or reduce the size of the tile used in the pattern.

5 Click **Scale Stroke Width** to control the width of each hatching stroke based on the light and dark intensity of the background color. Control the contrast by adjusting the **Min. Intensity scale** and/or **Max. Intensity scale**. When this checkbox is deselected, hatching behaves just like a pattern—the strokes do not vary in width.

6 Click **Use Background Color** to color the hatching strokes with the object's original color. When this option is deselected, hatching is applied to the object based on the intensity of the original color. The color is discarded and only hatching remains.

7 Click **Keep Original Paths** to include the object's original path in the hatched image. When this option is deselected, the path itself is discarded and the resulting object consists of only the hatching pattern.

8 Click **OK**. The hatch is applied to the selected object.

Apply a hatch.

## Creating and Editing Skeletal Strokes

We provide you with a number of pre-defined Skeletal Strokes located in the Stroke Warehouse palette but the real power of Expression comes as you create and edit your own Skeletal Strokes.

### Creating Skeletal Strokes

Expression allows you to create a Skeletal Stroke from any vector picture, whether it is clip art, artwork you create in Expression, or artwork you import from another application.

**To define a new Skeletal Stroke:**

1 Create or open a picture you would like to use as a Skeletal Stroke.

2 Click the **Definition Tools** icon in the **Tools** toolbar and choose the **Stroke Definition Box** tool. The cursor changes to a crosshair.

The Stroke Definition Box tool.

3 Drag a marquee around your picture defining its reference frame. An outline of the reference frame appears and an arrow indicates the direction of the stroke.

Define the reference frame.

Consider the following when creating the reference frame:

Be aware of exactly how you draw your marquee: The stroke includes any space before, after, above or below the paths in your stroke, if that space is included in the reference frame.

Any object partially or completely enclosed in the marquee is included in the selection. However, you can delete or edit the objects after you take them into the Stroke Definition window.

Instead of using the Stroke Definition Box tool, you can select the objects you want to include in your Stroke, and choose **Stroke menu▸ New Stroke Definition**.

If an object you are including in a stroke definition contains a pattern fill, the pattern will appear to be scaled differently in the Stroke Definition window. If the pattern has an excessive amount of white space, it may not be visible in the Stroke Definition window. Don't worry—the display of the pattern in this window is for reference only. When you draw with the stroke, the pattern will be scaled correctly.

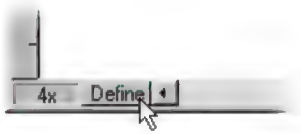
The **Stroke Definition** window appears displaying your new stroke and its reference frame. You can continue editing your picture from this window using the standard drawing tools described in ➤"Drawing Tools" in Chapter 3, "Creating Paths."

The object appears in the Stroke Definition window.

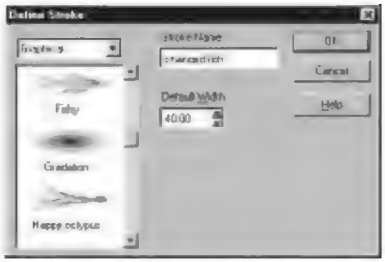
4 Use anchoring or repeating as desired to maintain the aspect ratio or repeat certain elements along a path.

For more information on anchoring or repeating, see ➤"Using Anchoring." or ➤"Repeating Elements of a Stroke," later in this chapter.

5 When you are happy with the picture, click the **Define** button at the lower left of the window or choose **Stroke menu▸ Define Stroke**. The Define Stroke dialog appears.




The Define button.



The Define Stroke dialog.

6. Enter a name for your stroke and set its **Default Width** in points.

7. Select a sub-directory if desired. Strokes must be stored in the Stroke directory or one of its subdirectories in order for Expression to find and use them.

8. Click **OK**. The stroke is now saved in the Stroke Warehouse palette and can be used on any path in Expression.

### Editing a Stroke

After you have created a Skeletal Stroke, you can edit its definition at any time. When you edit a Stroke definition, the changes you make are automatically applied to all instances of the stroke in open documents.

**To edit a stroke:**

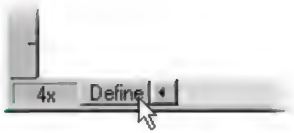
1. Double-click on the stroke you wish to edit from the **Stroke Warehouse** palette.

You can also select an object with a Skeletal Stroke already applied. Choose **Stroke menu▸ Edit Stroke Definition**. The selected stroke appears in the Stroke Definition window.

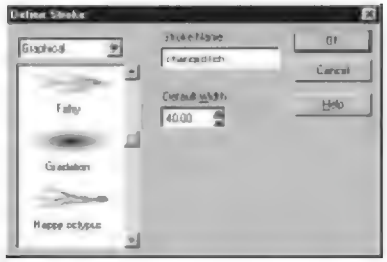
Double-click on a stroke in the Stroke Warehouse palette to edit.

2. Using the standard drawing tools, edit the picture. You can also edit the stroke and fill attributes of your artwork using the Paint Style and Custom Color palettes.

3. When you are happy with the picture, click the **Define** button at the lower left of the window or choose **Stroke menu▸ Define Stroke**. The Define Stroke dialog appears.




The Define button.



The Define Stroke dialog.

4. Enter the same name to replace all instances with the edited stroke or enter a new name to create a new stroke.

5. Click **OK**. The edited stroke is now saved in the Stroke Warehouse palette and can be used on any path in Expression.

## Using Anchoring

When you apply a Skeletal Stroke to a path, the Skeletal Stroke stretches or compresses to fit the path. When a stroke stretches or compresses, its aspect ratio—the ratio of width to height—changes, distorting the appearance of the stroke.

You can control this distortion by using anchoring to constrain the aspect ratio of the entire stroke or just a part.

Without anchoring the heads and tails are distorted.

With anchoring, the heads and tails maintain correct proportion.

## Creating Anchors

Anchoring allows you to define what part of the stroke maintains its proportion when the aspect ratio of a path is changed.

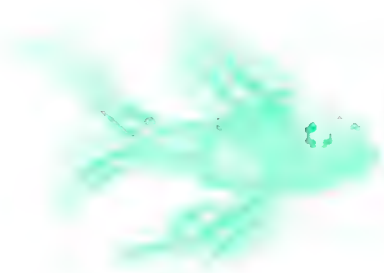
Anchors can be created at the beginning and/or end of a stroke, or at a fixed point along the stroke.

### To create an anchor:

1. From within the Stroke Definition window, click the **Anchor/Repeat Tool** icon from the **Tools** toolbar and choose the **Anchor** tool.

The Anchor tool.

2. Drag a marquee to select all points to be included in the anchor.



Select points to be anchored.

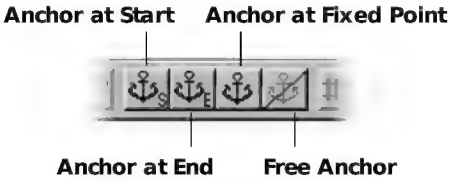
3. **Shift**-click to select additional points or to remove points from the selection.

4. Choose an anchor type from the **Actions** toolbar to create an anchor. You have the following options:

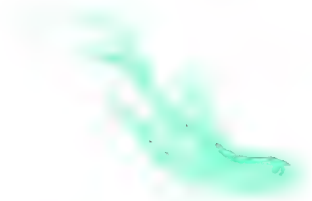
   Anchor node at the start of stroke. You can also choose **Stroke menu▸ Anchor to Start**.

   Anchor node at the end of stroke. You can also choose **Stroke menu▸ Anchor to End**.

   Anchor node at a fixed point along the stroke.




The Anchor types.



Apply your stroke to a path.

## Removing Anchors

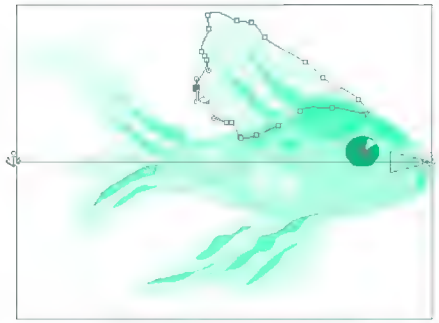
After you have created an anchor, you can remove a node from the anchor or remove the anchor altogether by using the **Free Anchor** button on the Actions toolbar.

### To remove a node from an existing anchor:

1. From the Stroke Definition window, click the **Anchor/Repeat Tool** icon from the **Tools** toolbar and choose the **Anchor** tool.

The Anchor tool.

2. Click the node you wish to remove. Both the node and the anchor to which it belongs are selected.



Selected the node to be removed.

3. Click the **Free Anchor** button from the **Actions** tool. You can also choose **Stroke menu▸ Free Anchor**. The node is removed from the anchor. Any other nodes belonging to the same anchor is not affected.

The Free Anchor tool.

### To remove an anchor:

1. From the Stroke Definition window, click the **Anchor/Repeat Tool** icon from the **Tools** toolbar and choose the **Anchor** tool.

2. Click in the Stroke Definition window to select an existing anchor.

3. Click the **Free Anchor** button from the **Actions** tool.

## Relocating Anchors

After you have created an anchor, you can move it anywhere along the length of the stroke reference frame. Moving an anchor does not move the associated nodes; it simply changes the point to which they are anchored.

### To relocate anchor:

1. From the Stroke Definition window, click the **Anchor/Repeat Tool** icon from the **Tools** toolbar and choose the **Anchor** tool.

The Anchor tool.

2. Drag an anchor icon horizontally to change its location.

## Repeating Elements of a Stroke

You can designate certain elements of a stroke to repeat instead of stretching to fit your path. This function can be very effective if you plan your stroke carefully.

For example, you could create a train consisting of an engine, a passenger car and a caboose. By designating the passenger car as repeating, with just one path you can create a train consisting of numerous passenger cars but only one engine and one caboose.

Repeating stroke.

**To repeat part of a stroke:**

1. From the Stroke Definition window, click the **Anchor/Repeat Tool** icon from the **Tools** toolbar and choose the **Repeat** tool.

The Repeat tool.

2. Drag a marquee to select all objects to be included in the repeat.

3. **Shift**-click to select additional objects or to remove objects from selection.

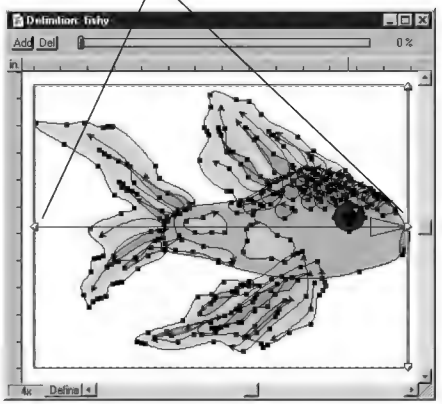
4. Click the **Make Repeating** button from the **Actions** toolbar. A **Repeat** frame appears, indicating that the selected objects have been designated to repeat, rather than stretch along the path.

   You can also choose **Stroke menu▸ Make Repeating**.

Unlike the Anchor tool, which operates on node selections, the Repeat tool operates on object selections. Individual nodes cannot be selected with the Repeat tool

The Make Repeating button.

**Repeat frame handles**




A Repeat frame appears.

The Repeat frame has draggable handles which allow you to specify the portion of the stroke (as a percentage of the entire stroke length) over which the selected object(s) should repeat. By default, the Repeat frame covers the entire reference frame, meaning that the object(s) repeat over the entire length of the stroke.

5. If desired, use the **Repeat** tool to drag the center handle on either end of the Repeat frame left or right. This specifies the start and end points for the repetition, as percentage values of the entire stroke length.

The top and bottom handles on the right end of the Repeat frame allow you to scale the repeating object(s) up or down as they repeat. By default, the handles are set so that the object(s) do not scale.

6. If desired, use the Repeat tool to drag the top or bottom handle on the right end of the Repeat frame up or down. This specifies the extent to which the object(s) are scaled as they repeat along the path. When you drag one handle the other mirrors it, constraining the scaling to be centered vertically on the stroke's horizontal axis.

### Anchoring the Starting and Ending Points of a Repeat Frame

If you want, you can anchor the starting or ending point of a Repeat frame to the beginning or end of the stroke, respectively. In this case, the limits of the Repeat region are not defined as percentages of the stroke length (proportional to its width), but as set distances from the ends of the stroke.

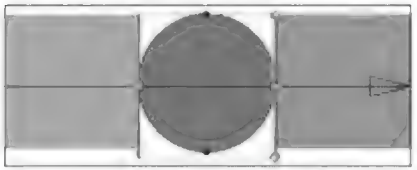
**To anchor the starting or ending point of the Repeat frame:**

1. From the Stroke Definition window, click the **Anchor/Repeat Tool** icon and choose the **Repeat** tool.

The Repeat tool.

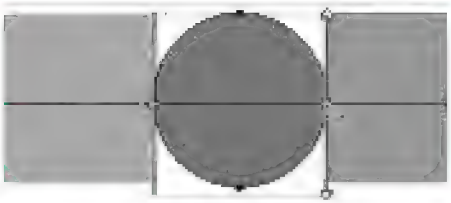
2. Select a Repeat frame to activate its handles.

3. Hold down the **Shift** key and click the center handle on either end of the Repeat frame to anchor it.



Squares are anchored at ends and the circle is a repeating element.

In some instances, the stroke will contain gaps between elements.



To anchor the repeat frame, Shift-click on the center handle

Anchoring the Repeat frame eliminates gap between elements.

### Removing Repeating Parts

After you have designated a particular object to be repeating, you can always choose to go back and make it non-repeating.

**To revert a repeating part to a non-repeating part:**

1. From the Stroke Definition window, click the **Anchor/Repeat Tool** icon from the **Tools** toolbar and choose the **Repeat** tool.

The Repeat tool.

2. Click or drag a marquee to select a repeating part, or click on a Repeat frame.

3. Click the **Make Non-repeating** button on the **Actions** tool. You can also choose **Stroke menu▸ Make Nonrepeating**.

The Make Non-repeating button.

## Creating Multi-view Strokes

Expression's Multi-view stroke feature is particularly useful for adding variations to your artwork. It also allows you to create simple animations with very little work. This section explains how to create and edit Multi-view strokes.

Instructions for applying Multi-view strokes appear in ➤"Applying Skeletal Strokes," earlier in this chapter.

Whereas ordinary Skeletal Strokes are defined from a single picture, a Multi-view stroke is defined from a sequence of different (but closely related) pictures. Expression treats these pictures as different views of a single stroke, any of which may be used each time you apply the stroke. Each view is assigned a shape parameter between 0% and 100%, which allows you to specify which view to use. Because Expression automatically generates "in-between" views from the original views in the Stroke definition, a Multi-view stroke can have a wide range of appearances.

To add randomness to your artwork, you can create a Multi-view stroke and have Expression randomly pick a view each time you draw with the stroke. Or, if you prefer a more controlled approach, you can explicitly specify which view to use for each instance of the stroke. For example, a Multi-view stroke might be used to simulate a brush which spatters paint in spots of varying size and shape; because each instance of the stroke is slightly different, the simulation is more convincing. The same principle also applies to Graphic Element strokes. You could design a Multi-view stroke to create an entire school of fish, each one slightly different, without the tedium of tweaking a bunch of duplicates.

You can animate with Expression by treating a Multi-view stroke's sequential views like keyframes in an animation. Expression automatically creates the "in-between" frames. Any Multi-view stroke can be rasterized (converted to a bitmap) and saved as a movie. You can save movies in any of the following formats: QuickTime (Macintosh), AVI (Windows), or a sequence of still images in any of the formats Expression supports. For more information on the types of formats Expression supports, see ➤"Opening and Saving Documents" in Chapter 1, "Overview of Expression."

The basic process for designing a Multi-view stroke is straightforward. You simply draw (or import) artwork for the stroke's initial view. Then, within the Stroke Definition window, you create additional views by editing the initial artwork with Expression's editing tools. The only limitation is that there must be a one-to-one correspondence between objects and nodes across

all of the views in a particular stroke. That is, you cannot add or delete objects or nodes from one view to the next.

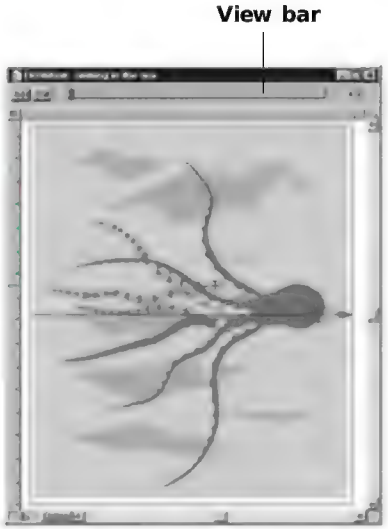
### To create a Multi-view stroke:

1. Using Expression's drawing tools, draw the initial view of your Multi-view stroke.

2. Click the **Definition Tools** icon in the **Tools** toolbar and choose the **Stroke Definition Box** tool. The cursor changes to a crosshair.

The Stroke Definition Box tool.

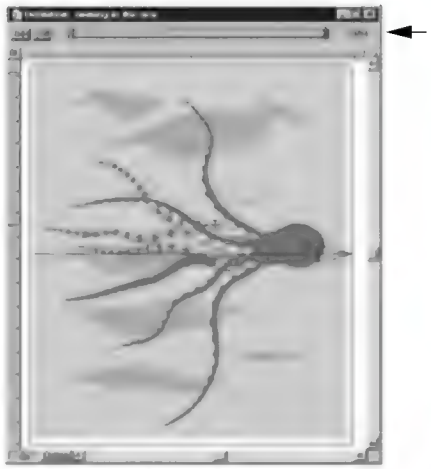
3. Drag a marquee around the image(s) you created. You can also select the image(s) and choose **Stroke menu▸ New Stroke Definition**. A new Stroke Definition window appears, containing the selected image(s).




Define the area to be contained in the stroke.

4. Still in the Stroke Definition window, click the **Add** button. A new view is added to the stroke. A View marker representing the new view is added to the right end of the View bar.

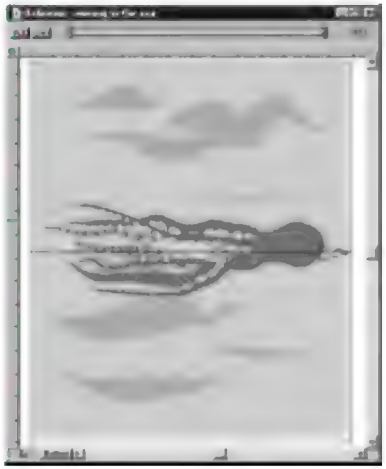
   A selected marker indicates which view you are currently working on. The shape parameter of the current view (a percentage value between 0% and 100%) is displayed to the right of the View bar.



Add a new marker.

5. Using any of the **Selection** tools and **Transformation** tools (Rotate, Scale, Mirror and Shear), move and edit objects and points in the selected view.

   You can also edit certain attributes of any Skeletal Strokes within the view. For more information on editing within views, see ➤"Adding Views," later in this chapter.



Edit the new view as needed.

6. Create additional views and adjust the spacing between views if desired. For more information on adding views, see ➤"Adding Views," below.

7. Click the **Define** button in the lower left corner of the Stroke Definition window to define the stroke.

8. Enter a name for the new stroke, enter a default width and specify a directory in which to save the stroke.

9. Click **OK**. The stroke is automatically added to the Stroke Warehouse palette. Multi-view strokes are identified in the Stroke Warehouse palette by a blue dot.

Multi-view strokes are identified in the Stroke Warehouse palette by a blue dot.

## Adding Views

A Multi-view stroke can have as many views as you like. Rather than draw each new view from scratch, you edit existing nodes (points) to create new views. You can add a new view at a specific point along the View bar, or automatically add a view halfway between two existing views.

When you create a new view, its initial appearance is automatically generated by Expression, based on the adjacent views. You can then use the **Selection** tools and the **Transformation** tools (Rotate, Scale, Mirror and Shear) to move and reshape the paths to your liking. If your Multi-view stroke contains instances of other Skeletal Strokes, you can also use the Paint Style palette to change certain attributes of these strokes width, shear angle and shape between views.

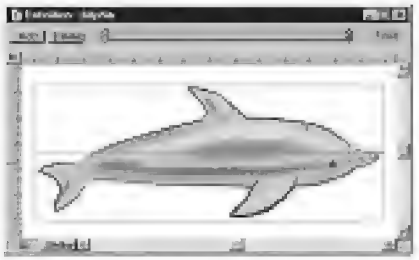
Only the positions of object and nodes and the stroke parameters listed above can be changed between views of a Multi-view stroke. Any other changes you make while working in a particular view are applied across all of the views in the Multi-view stroke. Such changes include adding or deleting objects, changing colors, etc.

If a Skeletal Stroke is used in the construction of a Multi-view stroke, the shear and width information of that stroke is actually stored as the position of its Shear/Width handle. On generating the in-between views, the Shear/Width handles are interpolated in the same manner as other nodes. This approach could sometimes result in a fluctuation of the shear and width of a moving stroke between a pair of views, even if the shear and width of that particular stroke are identical in both views. The effect can be minimized by inserting an extra view if the fluctuation is particularly noticeable.

Try using one Multi-view stroke within the definition of another Multi-view stroke. You can use the Shape slider on the Paint Style palette to change the appearance of the nested Multi-view stroke from one view to the next. This allows the nested Multi-view stroke to behave like an "animated sprite" within the other Multi-view stroke. For an example of this technique, see the **Expression Creative Techniques** guide which came with your documentation.

### To add another view:

1. From the Stroke Definition window, hold down the **Shift** key and click along the View bar where you want to add the new view. A new view is automatically created and selected for editing.



Add a new marker.

2. Using any of the **Selection** tools and **Transformation** tools (Rotate, Scale, Mirror and Shear), move and edit objects and points in the new view.

3. Using the **Paint Style** palette, edit the width, shear angle and shape of any Skeletal Stroke in this view.

### To create a new view halfway between two existing views:

1. From the Stroke Definition window, select a view marker on the View bar.

2. Click the **Add** button to the left of the View bar. A new view is created halfway between the selected view and the next view. The new view is automatically selected for editing.

## Removing a View

You can also delete a view from a Multi-view stroke. When you do so, the stroke's other views are not affected.

**Note:** A Multi-view stroke must always have views with shape parameters of 0% and 100%. If you delete the stroke's rightmost view (100%), the view with the next-highest shape parameter is moved to the end of the View bar to replace it. Likewise, if you delete the leftmost view (0%), the view with the next-lowest shape parameter is moved to the left end of the View bar to replace it.

### To remove a view:

1. From the Stroke Definition window, select a view marker in the View bar.

2. Click the **Del** button to the left of the View bar. The selected view is deleted.

## Moving a View

After you have created a view, you can drag its marker left or right along the View bar to change its shape parameter. This allows you to alter the spacing between views, or even the order of the views.

### To move a view (change its shape parameter):

1. From the Stroke Definition window, select a view marker in the View bar.

2. Drag the view marker left or right along the View bar to its new position. The view's new shape parameter is displayed to the right of the View bar.

## Saving Multi-view Strokes as Animation

A Multi-view stroke may be saved as a movie, allowing you to create a simple animation. When you use a Multi-view stroke to animate, you can think of the stroke's views as key frames, and the View bar at the top of the Stroke Definition window as a timeline. The relative timing of the events in your animation depends on the spacing of the views along the View bar. The rectangular reference frame in the Stroke Definition window acts as a viewfinder, everything within the frame is "on camera."

To create a movie, Expression must rasterize the Multi-view stroke to create a sequence of bitmap images. You can specify the duration of the movie (in seconds) and the frame rate (in frames per second), as well as the height, width and resolution.

If you leave the resolution set at 72 dpi (the default) and enter the height and width in points, then the height and width values you enter correspond to the actual height and width of the animation in pixels. This is generally recommended, since animations are for viewing on screen and are usually measured in pixels rather than real-world units.

You should consider the final format of your animation when choosing its height, width and frame rate. For on-screen multimedia animation, a frame rate of about 15 fps and height and width of 320x240 pixels are typical. When producing animation for the Internet, lower frame rates and smaller sizes are often used to keep file sizes small. Television animation, by contrast, is generally 640x480 pixels at 30 fps.

The type of compression you use also plays a role in the file size and playback rate of your animation. Experiment with the compression options offered by QuickTime (Macintosh) and Video for Windows (Windows) until you find the settings that best suit your needs.

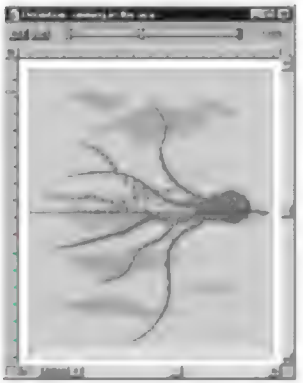
A finished animation can be saved in any of the following formats: Quicktime (Macintosh), AVI (Windows), or a sequence of still images in any of the bitmap formats For more information on the formats supported by Expression, see ➤"Opening and Saving Documents" in Chapter 1, "Overview of Expression."

Expression does not have the ability to play movies, so you need to view your completed animations in another application. Your computer probably came with a utility for playing movies. If not, you can acquire a shareware movie player at little or no cost via the Internet, an on-line service or a local user group.

**To save an animation:**

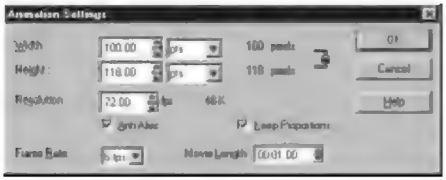
1. Double-click on the Multi-view stroke you wish to edit from the **Stroke Warehouse** palette. The stroke must have two or more views.

   You can also select an object with a Skeletal Stroke already applied. Choose **Stroke menu▸ Edit Stroke Definition**. The selected stroke appears in the Stroke Definition window.



Open the stroke in the Definition window.

2. Choose **File menu▸ Save Stroke as Movie**. The Animation Settings dialog appears.



The Animation Settings dialog.

3. Set the frame's **Width**, **Height** and **Resolution** by entering values into the appropriate fields. See above for some basic guidelines.

   By default, the values in the Width and Height fields are constrained to maintain a constant aspect ratio (ratio of width to height). When you change either of these values, the other automatically changes proportionally.

   For any particular animation, the aspect ratio is determined by the proportions of the reference frame in the Stroke Definition window. If you want the aspect ratio of your animation to be different from that of the reference frame, disable the **Keep Proportions** checkbox. You can then set the **Height** and **Width** values independently.

4. Enable or disable the **Anti-Alias** checkbox. When anti-aliasing is enabled (the default), Expression smooths all of the edges between regions of contrasting color, eliminating the "jaggy" stairstepped edges typical of bitmap images.

   Unless you specifically require an animation which is not anti-aliased (for use as a sprite in a multimedia authoring program, for example), there is no reason to disable this option. Anti-aliasing does not significantly increase the time required to rasterize an animation.

5. Set the **Duration and Frames per Second**. See above for some more general guidelines.

6. Click **OK**. The Save dialog appears.

7. Select the file type. You can choose a movie format or sequenced stills. For more information on file types, see ➤"Opening and Saving Documents" in Chapter 1, "Overview of Expression."

8. Click **Options** to select a video compression method. The Video Compression dialog appears. The compression options vary depending on the type of compressor you select. For more information on compression methods, see ➤"Choosing Video Compression," in the following section.

9. Click **OK** when you have set your compression options. The Save dialog reappears.

10. Select file destination and name the file.

11. Click **Save**. The Status bar at the bottom of the document window indicates the status of the rasterizing process.

## Choosing Video Compression

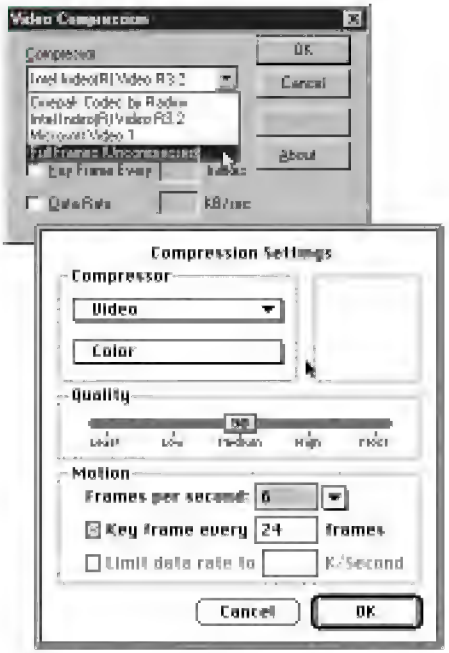
Animations can consume a significant amount of hard disk space. If you have disk space limitations, you will want to compress any movies you make.

The software compression and decompression algorithms (called codecs) that you can select in the Video Compression dialog are provided with QuickTime (Macintosh) or Video for Windows (Windows). Codecs compress data when you render an animation and decompress the data when you play the movie. Any Macintosh or Windows system with QuickTime or Video for Windows software can play back a compressed movie.

If you are using hardware for MPEG compression, see the instructions that accompanied your board for a description of available compression options.

### To select a compression option:

1. Click the **Options** button in the Save dialog. The Video Compression dialog appears.




The Video Compression Options dialog.

2. Select one of the compressor options from the Compressor pop-up menu. The options for the chosen compressor appear.

3. Set the options for the chosen compressor. Consult your QuickTime or Video for Windows documentation for descriptions of the various options.

4. Click **OK**.

## An Example of Video Animation

The following is a pictorial example of a video animation.

Frame 1.

Frame 2.

Frame 3.

Frame 4.

Frame 5.

Frame 6.

# 6

# Arranging and Editing Objects

This chapter describes all of the tools and commands needed to edit, arrange, move and transform your paths. Once you have created a path, you can edit the vector points and line segments as you would in other drawing applications. Expression provides most of the common editing functions as well as some special features only available in Expression.

## Objects, Paths and Points

Expression objects are paths. An object may be a simple or compound path, a group of paths, a clone of another object, or a text object. Each object is defined by points based on the particular drawing tools used in its creation. Before you can arrange or edit an object you must select the object or its points.

➔ **Note:** Points are available for selection within a simple or compound path but are not available within a clone. For more information on clones, see ➤"Cloning Objects."

## Selecting Objects and Points

The **Object Selection**, **Group Selection** and **Node Selection** tools are used for selecting and moving objects and points. The three tools have a lot in common and behave in Expression as they do in other applications.

Object and Group Selection tools

Node Selection tool.

### Mouse Hints and Tips

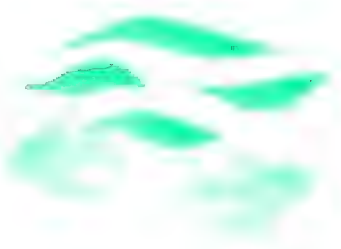
The following are hints and tips for selecting and moving objects with the mouse and Expression tools.

#### Selecting

- Click an object with any selection tool to select the object.

Select an object with any Selection tool.

- Drag a marquee with the **Object** or **Group Selection** tools to select all objects included or partially included within the selection area.



Drag a marquee to select objects.

- Drag a marquee with the **Node Selection** tool to select all points contained within the selection area.
- Click an object (or point) to select that object (or point), replacing the previous selection.
- Hold down the **Shift** key while clicking additional objects or points to add them to the selection, or while clicking selected objects or point(s) to remove them from the selection.
- Click an object within a group with the **Object Selection** tool to select the whole group.
- Click with the **Group Selection** tool to select an object within a group. Click the object again to select the entire group.

### Deselecting

- Click an empty space to deselect all.
- Choose the **Deselect All** button from the **Composition** toolbar. This can be especially useful if you have a large background object, making it difficult to click in an empty space.

The Deselect All button.

### Constraining and Moving

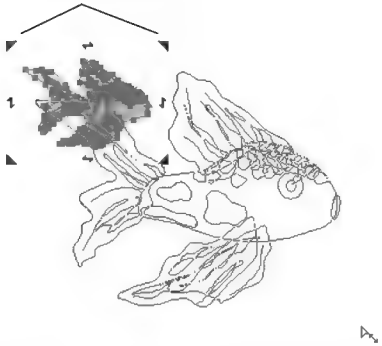
- Hold down the **Shift** key while moving a selection to constrain the movement to 45° increments.
- Drag to move an object.

By default, Expression displays the Resize handles (four corner and four transformation handles). These handles can be used to scale, rotate, or skew the selection.

### Scaling

- Drag one of the four corner handles to scale the selection in both the x and y directions.
- Drag one of the four corner handles while holding down the **Shift** key to scale proportionately. The opposite corner serves as the anchor point as the scaling is done.

**Corner handles**

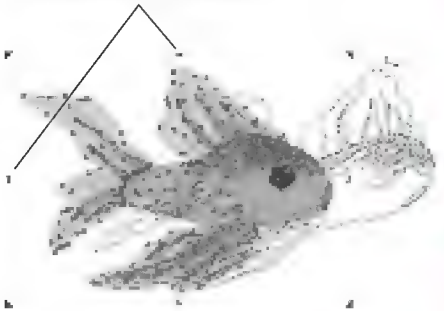


Drag a corner handle while holding Shift to scale proportionally.

### Transforming

- Drag one of the four transformation handles to skew the selected path.

**Transformation handles**



Drag a transformation handle to skew.

- Drag one of the four transformation handles while holding down the **Shift** key to rotate the selected path.

## Selecting Objects

Before you can edit or arrange an object you must select it. When an object is selected, its appearance changes indicating that it is selected.

Its path(s) and nodes are highlighted in the selection color of the object's layer. By default, Resize handles also appear, allowing you to transform the object directly.

Resize handles can be disabled via a user preference. For more information on setting preferences, see ➤"Options Tab" in Chapter 1, "Overview of Expression."

You should select an entire object (as opposed to some or all of its individual nodes) whenever you want to transform the object (move, rotate, scale, shear or mirror) without changing its basic shape.

Transformations applied to an object are stored in memory and can be reset at any time, restoring the object to its original location, orientation and scale. For additional information on transforming objects, see ➤"Transforming Objects," later in this chapter.

**To select an object:**

1. Using the **Object Selection** or **Group Selection** tool, select the object.

Resize handles appear around the object indicating that it is selected.

## Selecting Points

In order to change the shape of a path, you must be able to select individual points. When a node is selected, it is displayed as a large, solid-filled square in the selection color of the object's layer. The path is also highlighted, and all of its unselected nodes are displayed as small, hollow squares.

Multiple nodes may be selected at once, whether they are on the same path or on several different paths. When more than one node is selected, Resize handles appear, allowing you to transform the multi-node selection.

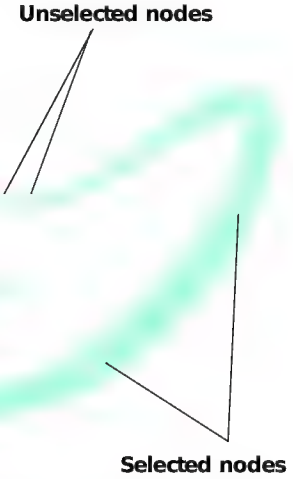
The Transformation tools also work on multi-node selections. Unlike transformations applied to objects, transformations applied to nodes actually change the basic shape of the path(s) and thus cannot be reset.

**To select point(s):**

1. Select an object with one of the tools listed above.
2. Choose the **Node Selection** tool from the **Tools** toolbar.

Node Selection tool.

3. Using the **Node Selection** tool, select a point. You can also drag a marquee with the Node Selection tool.




Selecting individual points.

4. Hold down the **Shift** key and click additional points to add them to the selection. You can also click on individual selected point(s) to deselect them.

## Viewing Selected Objects and Points

The appearance of an object or point varies depending on whether it is selected or unselected, as well as the View quality (Path, Wireframe or Preview) currently active.

**To set view quality:**

1. Choose preferred view quality from the **View menu**.

   For additional information on view quality, see ➤"Changing Your View" in Chapter 1, "Overview of Expression."

### Selected Objects

In all selected objects, all points are visible, each represented by a small, filled square. The last node is always represented by an arrowhead indicating the direction of the path.

In **Path view**, a selected path is shown as a colored line. Set selection colors for each layer by choosing **Arrange menu▸ Layer▸ Info**.

Path view, object is shown by its path

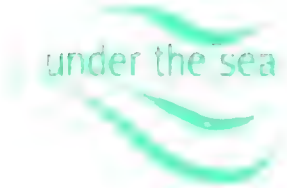
In **Wireframe view**, a colored line indicating the path, is superimposed on the wireframe.

Wireframe view, the path is shown by its unfilled outline, including any Skeletal Stroke outlines.

In **Preview view**, a colored line indicating the path, is superimposed on the color preview of the object.

No Bézier tangent handles are visible when the entire object is selected. Handles are only displayed when individual points (nodes) are selected.

B-Spline points are shown with a dotted line indicating the imaginary polygon that controls the shape of the B-Spline path.




Preview view, the path is shown by its painted representation

If your Preferences are set to **Show resize handles**, a triangle is positioned at each corner of the invisible bounding box containing the object. These corner handles can be used to resize the object.

Resize handles on a selected object.

The transformation handles are the center handles. These can be used to skew or rotate the selected object or nodes, depending on whether or not a modifier key is depressed.

- Drag the double arrows to skew the object.
- Drag the double arrows while holding down the **Shift** key to rotate the object.

Transformation handles on a selected object.

A selected text object is shown with its baseline.

Selected Text on a Path is shown with point of origin and baseline.

Selected text object and text on a path.

The beginning and ending points on a clone object are displayed as filled circles. You can not edit the shape of a clone object.

Selected clone object.

### Selected Points

The path is displayed, as described above, depending on view quality you have set.

Selected points are represented by a large filled square.

Bézier points show tangent handles.

### Unselected Points

Unselected point is represented as a hollow square.

Selected and unselected points.

## Transforming Objects

Transformation is a general term that refers to changes or modifications to a path that do not involve adding, removing or editing points. The object remains the same basic shape but is moved, scaled, rotated, mirrored or skewed. Transformations are done by dragging the object's handles. You are given a real-time preview of the changes as you drag. Or use the Transformation palette to make your changes numerically.

### Moving Objects

There are two methods for moving objects in Expression. You can move selected objects and points manually using the mouse, or you can enter specific distances into the Transformation palette.

**To move an object manually:**

1. Using the **Object Selection** or **Node Selection** tools from the **Tools** toolbar, select the object(s) or point(s) you want to move.
2. Drag selected object(s) or point(s). A real-time preview appears as you move the object(s).
3. Release the mouse button after the object or points are repositioned.

### To move an object using the Transformation palette:

1. Using the **Object Selection** or **Node Selection** tools from the **Tools** toolbar, select the object(s) or point(s) you want to move.

2. If the **Transformation** palette is not displayed, choose **Window menu▸ Transformation**. The Transformation palette appears.

3. Click the **Translate** tab. The attributes for moving objects appear in the palette.

The Transformation palette, Translate tab.

4. Enter distances in the X and Y axis or use the up and down arrows to scroll through the numbers.

5. Click **Apply** to apply selections to the selected object or click **Duplicate** to create a copy with the translation applied to the copy.

## Scaling Objects

These settings increase or decrease the distance between selected points along the x and y axes. Scaling is proportional along the specific axis but a different scaling factor may be applied to each axis. Scaling is applied relative to the point you select to serve as anchor or remain stationary during the scaling operation.

In addition to scaling selected objects using the Resize handles, scaling can be done using the **Scale** tool or the **Transformation** palette.

Scaling objects in Expression.

Scaling may also be applied to individual points on a path as well as the whole path.

### To scale using the Resize handles:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object you wish to scale.

2. Drag the corner Resize handles to resize the object. Use the **Shift** key to resize your object proportionally.

Resize your object using a selection tool.

### To scale an object using the Scale tool:

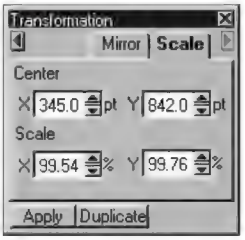
1. Using the **Object Selection** tool from the **Tools** toolbar, select the object you wish to scale.
2. Click the **Transformation Tools** icon from the **Tools** toolbar and choose the **Scale** tool.

The Scale tool.

3. Click to set the center point for scaling. If no center point is set, the center of the object becomes the scale center.
4. Drag to scale. Hold down the **Shift** key while dragging to scale the object proportionately.
5. Release the mouse button to set the scale.

### To scale an object using the Transformation palette:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object you wish to scale.
2. If the **Transformation** palette is not displayed, choose **Window menu▸ Transformation**. The Transformation palette appears.
3. Click the **Scale** tab. The attributes for scaling objects appear in the palette.




The Transformation palette, Scale tab.

4. In the Center entry boxes, enter the location of center point for scaling transformation.
5. In the **Scale** entry box, enter the percentage of scaling for the X and Y axis.
6. Click **Apply** to apply selections to the selected object or click **Duplicate** to create a copy with the scale applied to the copy.

## Rotating Objects

You can also change the angle of any selected path. The distance between points is not changed. You can rotate around the object's center or simply click to set a different center of rotation.

You can rotate objects using the transformation handles, the **Rotation** tool or the **Transformation** palette.

Objects before and after rotating.

### To rotate an object using the transformation handles:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object you wish to rotate.

2. Drag the bounding box side handle while holding down the **Shift** key. The object is rotated using the center of the bounding box as the rotation center.

Rotating objects.

3. Release the mouse button to set the rotation.

### To rotate an object using the Rotation tool:

1. Using the **Object Selection** or **Node Selection** tools from the **Tools** toolbar, select the object you wish to rotate.

2. Click the **Transformation Tools** icon from the **Tools** toolbar and choose the **Rotation** tool.

The Rotation tool.

3. Click to set the center of rotation. If no center point is set, the center of the object becomes the center of rotation.

4. Drag to rotate. A set of lines and an arc appear as you drag, indicating the rotation as well as a preview. Hold down the **Shift** key while dragging to constrain the rotation angle as set in **File menu▸ Preferences**.

5. Release the mouse button to finish the rotation.

### To rotate an object using the Transformation palette:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object you wish to rotate.

2. If the **Transformation** palette is not displayed, choose **Window menu▸ Transformation**. The Transformation palette appears.

3. Click the **Rotate** tab. The attributes for rotating objects appear in the palette.

The Transformation palette, Rotate tab.

4. In the Center entry boxes, enter the location of center point for rotating transformation.

5. In the **Angle** entry box, enter the rotation angle.

6. Click **Apply** to apply selections to the selected object or click **Duplicate** to create a copy with the rotation applied to the copy.

## Mirroring Images

Mirroring inverts the position of each point in the selection, creating a mirror image based on the object's center point or any point of reflection you set.

Objects before and after mirroring.

### To reflect or mirror using the Mirror tool:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object you wish to mirror.
2. Click the **Transformation Tools** icon from the **Tools** toolbar and choose the **Mirror** tool.

The Mirror tool.

3. Click to set the center point of reflection. If no center point is set, the center of the object becomes the point of reflection.
4. Drag to reflect the object. Hold down the **Shift** key while dragging to constrain the angle of the reflection axis.
5. Release the mouse button to set the reflection.

### To mirror an object using the Transformation palette:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object you wish to mirror.
2. If the **Transformation** palette is not displayed, choose **Window menu▸ Transformation**. The Transformation palette appears.
3. Click the **Mirror** tab. The attributes for mirroring objects appear in the palette.

The Transformation palette, Mirror tab.

4. In the **Center** entry boxes, enter the location of center point for mirroring transformation.
5. In the **Angle** entry box, enter the angle of reflection.
6. Click **Apply** to apply selections to the selected object or click **Duplicate** to create a copy with the mirroring applied to the copy.

## Shearing Objects

You can think of shearing as the way an image printed on the edges of a book can be distorted by pulling the book at an angle. The original image is contained in an imaginary rectangle. Once sheared, that rectangle has been changed to a parallelogram with the image distorted appropriately.

Shearing changes the angular relationship between each point in the selection and a specific point on the shear axis. A given point's shear anchor point is the point on the shear axis nearest to the point's original position. You specify the shear axis (plane) and shear angle.

Objects before and after shearing.

### To shear an object using the transformation handles:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object you wish to shear.

   The **Show resize handles** preference in the Preference's Options tab must be enabled to show the Resize handles. For more information on setting preferences, see ➤"Options Tab" in Chapter 1, "Overview of Expression."

2. Drag one of the transformation handles. Drag the top or bottom handles to skew horizontally. Drag the side handles to skew vertically. The object is sheared in the direction of the drag.

Shearing objects.

3. Release the mouse button to set the shear.

### To shear an object using the Shear tool:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object you wish to shear.
2. Click the **Transformation Tools** icon from the **Tools** toolbar and choose the **Shear** tool.

The Shear tool.

3. Click to set the shear axis point. If no axis point is set, the center of the object becomes the axis point.
4. Drag to shear the object. Hold down the **Shift** key while dragging to constrain the angle of the shear plane.
5. Release the mouse button to set the shear.

### To shear an object using the Transformation palette:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object you wish to shear.
2. If the **Transformation** palette is not displayed, choose **Window menu▸ Transformation**. The Transformation palette appears.
3. Click the **Shear** tab. The attributes for shearing objects appear in the palette.

The Transformation palette, Shear tab.

4. In the **Center** entry boxes, enter the location of center point for shearing transformation.

5. In the **Angle** entry box, enter the angle of shear.

6. In the **Plane** entry box, enter the degree of plane.

7. Click **Apply** to apply selections to the selected object or click **Duplicate** to create a copy with the shear applied to the copy.

### Shearing a Stroke

You can also adjust the shear of a Skeletal Stroke by adjusting the shear/width handle or the **Shear** slider in the **Paint Style** palette. The Shear/Width handle and the Shear slider adjust the shear of the Skeletal Stroke in relation to the path to which it is applied. The **Shear** tool, the transformation handles of the bounding box and the **Shear** tab of the Transformation palette adjust the shear of the path itself.

For more information on changing the shear of a stroke, see ➤"Shearing the Stroke" in Chapter 5, "Applying Strokes and Fills."

## Changing Perspective

Expression's **Perspective** tool allows you to quickly change the perspective of your artwork. This tool is especially helpful to edit an object which already has some perspective. Take for example, the image of a child's ABC block. In order to view this block from a different angle, you must set the Perspective Control Frame to the shape of one side of the cube, then use the Active Perspective Frame to change the angle.

The object's Perspective Frame may be considered to be a piece of imaginary paper with your artwork on it. The Perspective Control Frame can be edited when it is displayed with small circles at each corner.Click anywhere with the Perspective tool to change the Perspective Control Frame into the Active Perspective Frame, represented by larger circles at each corner. When the Active Perspective Frame is available changes you make will transform the artwork. Click to toggle back and forth between the Perspective Frame and the Active Perspective Frame.

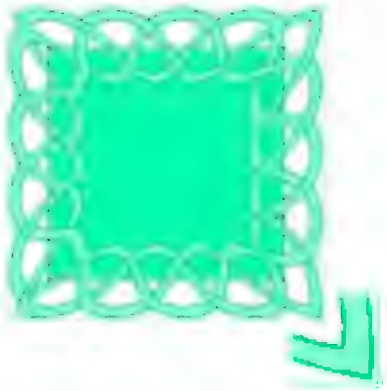
**To add perspective to an object:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object whose perspective you wish to change.

2. Click the **Transformation Tools** icon from the **Tools** toolbar and choose the **Perspective** tool. The Resize handles are replaced by the Perspective Control Frame, the smallest box that can enclose the object and all its handles, with small circles at each corner.

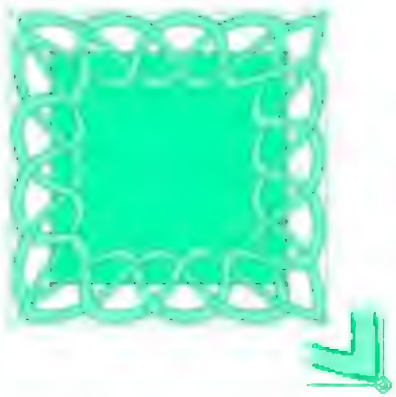
The Perspective tool.

3. Drag the corner circles to arrange the Perspective Control Frame to the size and shape of your object.



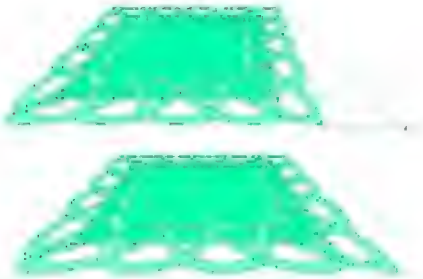
Arrange the Perspective Control Frame to the size of your object.

4. Click anyplace to change to the Active Perspective Frame.



Click on the object to change to the Active Perspective Frame.

5. Drag the corner handles of the Active Perspective frame to apply perspective.



Drag the Active Perspective handles to apply perspective.

## Transformation Shortcuts

Expression's Arrange menu also has some functions that assist you in using the **Transformation** tools. You can repeat, undo and make transformations permanent.

### To repeat last transformation:

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.

2. Transform the object using any of the methods described above.

Transform your object.

3. Select a different object or leave the original object selected.

4. Choose **Arrange menu▸ Repeat Last Transformation**. The last transformation is applied again to the current selection.

Repeat the transformation.

After transforming an object two or more times you can quickly apply all the accumulated transformations to that object or another selection.

### To repeat Accumulated Transform:

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.

2. Transform the object several times using any of the methods described above.

3. Select a different object or leave the original object selected.

4. Choose **Arrange menu▸ Repeat Accumulated Transform**. The selected object is transformed in the same manner as the original object selected in step one, using the same reference point for transformations that require a reference point.

   If you transform an object then later decide you do not want the transformation you can reset the object to its original state.

### To Reset Transform:

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object that has been transformed using any of the methods described above.

2. Choose **Arrange menu▸ Reset Transform**. The object is returned to its original state.

   After you transform an object you can commit to the new state before continuing. In that case, the Reset Transform will return the object to the state it was when you committed to it.

### To commit to transformation(s):

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object that has been transformed using any of the methods described above.

2. Choose **Arrange menu▸ Commit Transform**. The object does not change appearance. However, if you continue to transform the object then later select **Reset Transform** the object returns to this committed state rather than the original state.

## Grouping and Ungrouping Objects

Grouping allows you to designate a set of objects to be treated as a single object. Any set of two or more objects, even groups, can be grouped. Any group can be ungrouped.

Most Expression operations can be applied to a grouped object. For example, if you select a group, then apply a paint attribute to the group, the attribute is assigned to each element within the group.

However, individual objects and points within a group can not be selected separately with the **Object Selection** tool. To select individual objects within a group you need to use the **Group Selection** tool. To select individual points within a group use the **Node Selection** tool.

The Group Selection tool.

### To group object:

1. Using the **Object Selection** tool from the **Tools** toolbar, select the objects you want to group. You can click and **Shift**-click or drag a marquee to select objects.

2. Choose **Arrange menu▸ Group** or press **Command/Ctrl+G**.

**To ungroup objects:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select the group of objects you want to ungroup.

2. Choose **Arrange menu▸ Ungroup** or press **Command/Ctrl+U**.

## Duplicating Objects

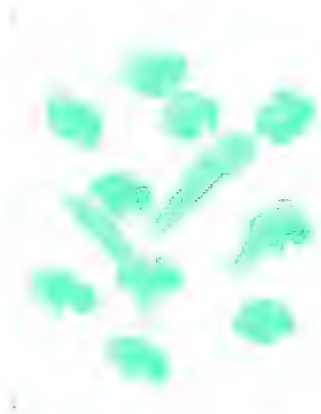
You can create an exact copy of any object by duplicating it. You can duplicate by giving an explicit command or during a transformation, transforming only the duplicate while leaving the original untouched.

**To duplicate an object:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object(s) you want to duplicate.

2. Choose **Edit menu▸ Duplicate** or press **Command/Ctrl+D**. The original object is copied and the copy is offset from the original.

   If the object you duplicate is an object which is itself a clone, the new copy reflects the attributes of the original master object, but is not itself a clone.



Duplicating objects.

**To duplicate an object while transforming:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select the object you want to transform. Transform means to translate (move), rotate, scale, mirror or shear an object. For more information on transforming objects, see ➤"Transforming Objects" earlier in this chapter.

2. Hold down the **Option** (Macintosh) or **Alt** (Windows) key while transforming the object. The original remains untouched and a duplicate is created and transformed.

Transforming and duplicating objects.

You can also use the **Transformation** palette to make your changes then click the **Duplicate** button.

## Cloning Objects

A clone is similar to a duplicate, but a clone maintains a link with the original or master object. A clone may be made from any path. Whenever the master object is edited (except for transformations and paint style) the clone is updated.

A clone may be transformed and its paint style may be edited, but it can not be edited in any other way. A clone is represented on screen with only the node(s) at its ends visible and these nodes are displayed as filled circles.

An original and a clone object.

If you duplicate a clone you get a duplicate of the master object including the Paint Style from the master object.

A clone and a duplicate of a clone.

**To clone an object:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select the objects you want to clone.

2. Choose **Edit menu▸ Clone** or press **Command/Ctrl+K**.

   You can not edit the shape of a clone object. Editing the shape of the master edits the shape of the clone in the same manner. Editing the paint style of the master object does not change the paint style of the clone.

   You can change a clone into a master object, which can then be edited by breaking the link between the master

object and the clone. Once the link is broken it can not be restored except by using **Edit menu▸ Undo** immediately.

**To break link between master object and selected clone:**

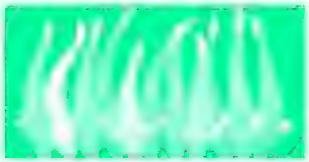
1. Using the **Object Selection** tool from the **Tools** toolbar, select the clone object.
2. Choose **Object menu▸ Convert To Path**. The selected clone is no longer linked to the master. You can now edit the shape of the object. Further changes to the master object do not affect the former clone.

## Arranging Objects

Expression provides several arrangement functions so you can quickly position selected objects in relation to each other. Arranging applies to objects, not individual points. All arrangement operations work along the document's horizontal and vertical axes and are based on the objects' rectangular bounding boxes.

There are three different arrangement operations that you can use with objects:

**Align** Arranges selected objects based on a particular line.



Aligning objects.

**Distribute** Arranges selected object equidistant from each other between the two extreme objects.

Distributing objects.

**Stack** Arranges selected objects along the specified axis with a user-specified gap between the objects bounding boxes. The default gap size is 0 pts.

Stacking objects.

### Aligning Objects

Use Expression's Align function to arrange objects exactly in relation to each other. Alignment is always based on the object's bounding box. A bounding box is the smallest rectangle that can enclose the entire object or group, including it's tangent handles and shear/width handle.

Objects before aligning.

Align has six variations:

**Top** The topmost selected object remains stationary while the other selected objects are moved vertically so that their tops align with the topmost object's top edge.

Aligning objects, top.

**Bottom** The bottommost selected object remains stationary while the other selected objects are moved vertically so that their bottoms align with the bottommost object's bottom edge.

Aligning objects, bottom.

**Left** The leftmost selected object remains stationary while the other selected objects are moved horizontally so that their left edges align with the left-most object's left edge.

Aligning objects, left.

**Right** The rightmost selected object remains stationary while the other selected objects are moved horizontally so that their rights align with the right-most object's right edge.

Aligning objects, right.

**Vertical Center** All of the selected objects are moved vertically so that their centers are aligned with the original center of the multiple selection.

Aligning objects, vertical center.

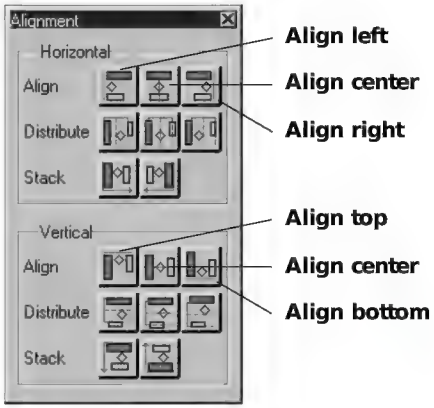
**Horizontal Center** All of the selected objects are moved horizontally so that their centers are aligned with the original center of the multiple selection.

Aligning objects, horizontal center.

**To align objects:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select two or more objects you want to align.

2. If the **Alignment** palette is not displayed, choose **Window menu▸ Alignment**. The Alignment palette appears.




The Alignment palette

3. Click on the **Vertical** and **Horizontal Align** icons to select the type of alignment you prefer.

You can also choose **Arrange menu▸ Align** to select the alignment you want.

## Distributing Objects

Use Expression's distribute function to evenly space selected items in relation to each other. Distribution is especially useful for creating images such as a picket fence or railroad track.

Distribute has six variations:

### Horizontal Distribution

Horizontal distribution, before.

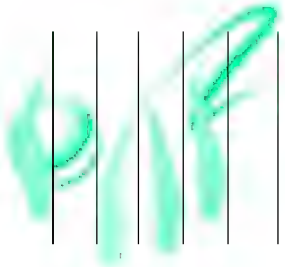
**Horizontal Lefts** The leftmost and rightmost selected objects remain stationary while the other selected objects are moved horizontally so that the left edges of all the selected objects are evenly spaced.

Distributing objects, lefts.

**Horizontal Centers:** The leftmost and rightmost selected objects remain stationary while the other selected objects are moved horizontally so that the centers of all the selected objects are evenly spaced.

Distributing objects, horizontal center.

**Horizontal Rights** The leftmost and rightmost selected objects remain stationary while the other selected objects are moved horizontally so that the right edges of all the selected objects are evenly spaced.

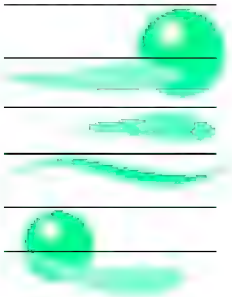


Distributing objects, rights.

## Vertical Distribution

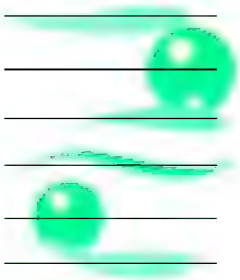
Vertical distribution, before.

**Vertical Tops** The topmost and bottommost selected objects remain stationary while the other selected objects are moved vertically so that the tops of all the selected objects are evenly spaced.



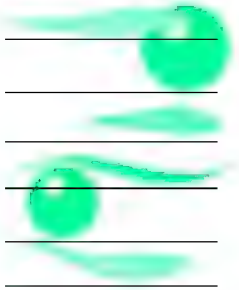
Distributing objects, top.

**Vertical Centers** The topmost and bottommost selected objects remain stationary while the other selected objects are moved vertically so that the centers of all the selected objects are evenly spaced.



Distributing objects, vertical center.

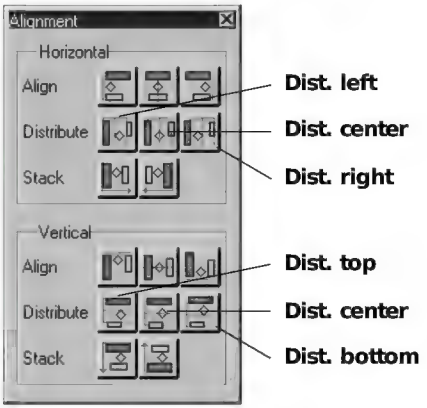
**Vertical Bottoms** The topmost and bottommost selected objects remain stationary while the other selected objects are moved vertically so that the bottoms of all the selected objects are evenly spaced.



Distributing objects, bottoms.

### To distribute objects:

1. Using the **Object Selection** tool from the **Tools** toolbar, select three or more objects you want to distribute.
2. If the **Alignment** palette is not displayed, choose **Window menu▸ Alignment**. The **Alignment** palette appears.




The Alignment palette.

3. Click on the **Vertical** and **Horizontal Distribute** icons to select the kind of distribution you prefer.

You can also choose **Arrange menu▸ Distribute** to select the distribution you want.

## Stacking Objects

Use Expression's stack function to arrange two or more objects so there is gap of a specified distance between their bounding boxes. Set the gap to zero when you want objects to touch but not overlap.

To set the gap size, choose **File▸ Preferences**. For more information on setting preferences, see ➤"Setting Preferences" in Chapter 1, "Overview of Expression."

Objects before stacking.

Stack has four variations:

**Top (Up)** The bottom-most object remains stationary while the other selected objects are moved vertically so that there is a vertical gap of the specified distance between each pair of neighboring objects.

Stacking objects, up.

**Bottom (Down)** The topmost object remains stationary while the other selected objects are moved vertically so that there is a vertical gap of the specified distance between each pair of neighboring objects.

Stacking objects, down.

**Left** The leftmost object remains stationary while the other selected objects are moved horizontally so that there is a horizontal gap of the specified distance between each pair of neighboring objects.

Stacking objects, left.

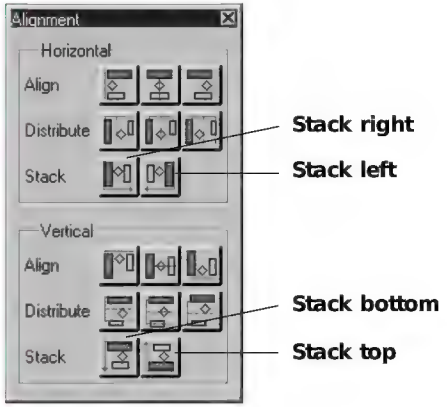
**Right** The rightmost object remains stationary while the other selected objects are moved horizontally so that there is a horizontal gap of the specified distance between each pair of neighboring objects.

Stacking objects, right.

**To stack:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select two or more objects you want to stack.

2. If the **Alignment** palette is not displayed, choose **Window menu▸ Alignment**. The Alignment palette appears.




The Alignment palette.

3. Click on the **Vertical** and **Horizontal Stack** icons to select the type of stacking you prefer.

You can also choose **Arrange menu▸ Stack** to select a stacking method.

## Layering Objects

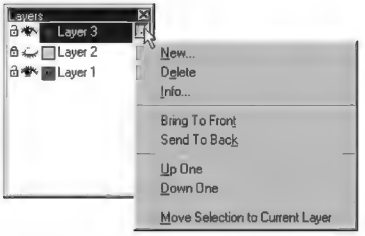
Each Expression document consists of one or more layers. A layer may contain any number of objects and every object is assigned to a specific layer although you can change its layer.

Layers are ordered from front to back with back layers being drawn first and front layers being drawn last, possibly obscuring parts of back layers. Use this feature to control the appearance of the image. You can create and delete layers, assign names to layers, lock them, and change the display quality of specific layers.

Any object on any unlocked layer may be selected and manipulated. A multiple selection may include objects on several different layers. Adding additional objects to a selection does not change the currently active layer.

Removing objects from a multiple layer selection may change the currently active layer. If all remaining objects are from a single layer, that layer becomes the current layer.

You can use the **Arrange menu▸ Layer** command or the Layers palette to maintain your layers. To display the Layers palette, choose **Window menu▸ Layers**.




The Layers palette.

### Creating New Layers

Layers can be added and used to control groups of objects at once.

**To create a new layer:**

1. If the **Layers** palette is not displayed, choose **Window menu▸ Layers**. The Layers palette appears.

2. Click the icon above the scroll bar to access the Layers pop-up menu (shown above) and choose **New** from the menu. The new layer is placed at the front of the layering order and becomes the current layer.

You can also choose **Arrange menu▸ Layer▸ New**.

### Deleting a Layer

Delete a layer when you want to remove all objects on a layer at one time.

**To delete layer:**

1. If the **Layers** palette is not displayed, choose **Window menu▸ Layers**. The Layers palette appears.
2. Click the name of the layer you want to delete.
3. Click the icon above the scroll bar and choose **Delete** from the menu. The layer as well as all objects on that layer are removed. Undo is possible.

You can also choose **Arrange menu▸ Layer▸ Delete**.

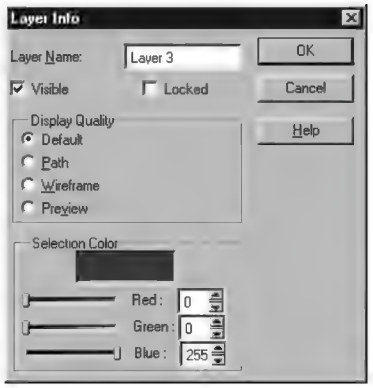
### Hiding Layers

Layers can be hidden on your Workspace. This is useful if you do not want objects on the layer to be visible on the screen, you want to work on layers partially covered by other layers or you do not want certain layers to print.

**To hide a layer:**

1. If the **Layers** palette is not displayed, choose **Window menu▸ Layers**. The Layers palette appears.
2. Click the name of the layer you want to hide.
3. Click the icon above the scroll bar and choose **Info** from the menu. The Layer Info dialog appears.

You can also choose **Arrange menu▸ Layer▸ Info**.




The Layer Info dialog.

4. Deselect **Visible**. Hiding a layer automatically locks the layer as well. A hidden layer does not display on screen, nor does it print.

From the Layers palette, click on the eye icon next to the layer you want to hide. Click again to display the layer.

## Locking Layers

Layers can be locked to prevent accidental changes to a layer.

**To lock a layer:**

1. If the **Layers** palette is not displayed, choose **Window menu▸ Layers**. The Layers palette appears.
2. Click the name of the layer you want to lock.
3. Click the icon above the scroll bar and choose **Info** from the menu. The Layer Info dialog appears.

You can also choose **Arrange menu▸ Layer▸ Info**.

4. Click **Locked**. The objects in that layer cannot be moved or changed until you unlock the layer.

From the Layers palette, click on the lock icon next to the layer you want to lock. Click again to unlock the layer.

## Unlocking Layers

Locked layers must be unlocked in order to edit or move objects within the layer.

**To unlock a layer:**

1. Click the icon above the scroll bar and choose **Info** from the menu. The Layer Info dialog appears.
2. Click the name of the layer you want to unlock.

You can also choose **Arrange menu▸ Layer▸ Info**.

3. Deselect **Locked**.

From the Layers palette, click on the lock icon next to the layer you want to unlock.

## Changing the Active Layer

All new objects are created on the active layer. When you want to add an object to a particular layer, make it the active layer.

**To change the currently active layer:**

1. If the **Layers** palette is not displayed, choose **Window menu▸ Layers**. The Layers palette appears.
2. Select a layer you want to make active from the **Layers** palette.
3. Create new objects as needed. New objects are automatically placed on the selected layer.

### Naming Layers

Layers can be named to help organize your document.

**To name layer:**

1. If the **Layers** palette is not displayed, choose **Window menu▸ Layers**. The Layers palette appears.
2. Choose **Arrange menu▸ Layer▸ Info**. The Layer Info dialog appears.
3. Highlight current name and type new name.
4. Click **OK**.

From the Layers palette, double-click on the layer name to display the Layer Info dialog. Change the name as described above.

### Changing the Selection Color

Each layer is identified by its own color. This color appears as an outline on any selected object within a layer. The selection color can be changed as needed to assist you in identifying different layers.

**To change selection color:**

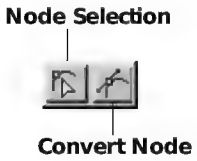
1. If the **Layers** palette is not displayed, choose **Window menu▸ Layers**. The Layers palette appears.
2. Choose **Arrange menu▸ Layer▸ Info**. The Layers palette appears.
3. Drag **Red**, **Green**, **Blue** sliders to set new color.

From the Layers palette, double-click on the layer name to display the Layer Info dialog. Change the color as described above.

## Editing Paths

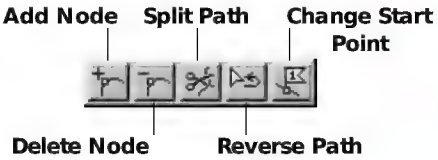
Edit a selected path with the following tools:

- **Node Selection** tool
- **Convert Node** tool




The Node tools.

- **Add Node** tool
- **Delete Node** tool
- **Split Path** tool
- **Reverse Path** tool
- **Change Start Point** tool




The Path tools.

## Selecting and Moving Points

The **Node Selection** tool lets you select a particular point along a path. Selected points are shown as filled squares. Use this tool also to manipulate tangent handles to alter the shape of your path.

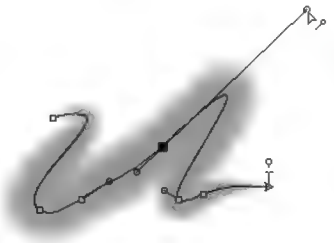
- Using the **Node Selection** tool from the **Tools** toolbar, select a point. A selected point is displayed as a large filled square and its tangent handles as well as the tangent handles before and after the point, if any, are also displayed.

Select a point.

- Drag the Bézier point to reposition it.

Drag a Bézier point to reposition

- Drag the point's tangent handle or an adjacent line segment to edit the shape of the path.



Drag a point's tangent handle to reshape.

Tangent handle behavior depends on the assigned Node Continuity. For more information on changing tangent handles, see ➤"Changing Point Continuity" following. The default Node Continuity is:

**Freehand and Smoothed Polyline tools** Smooth

**Pen tool** Symmetrical

**Polyline tool** Unconstrained

- Drag a B-Spline control line point to reposition it.

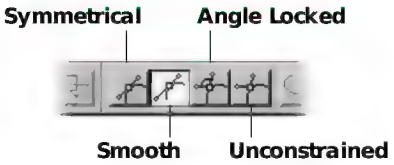


Drag a B-Spline control point to reposition.

## Changing Point Continuity

Expression gives you several choices for the behavior of tangent handles when you are editing. This makes it easier for you to edit your paths just the way you want to. Set your preference by selecting **Edit menu▸ Node Continuity Mode** or by clicking on the preferred button in the **Actions** toolbar.

To select a toolbar not currently visible choose **Window menu▸ Toolbars**.




The None Continuity controls.

**To set node continuity:**

1. Using the **Node Selection** tool from the **Tools** toolbar, select an object you want to edit.
2. Select the point you want to change. The point becomes a larger solid square.



Select the node you want to change.

3. Choose **Edit menu▸ Node Continuity** or click the preferred button in the **Actions** toolbar.

**Symmetrical** Tangent handles remain opposite each other and equidistant from the point itself.



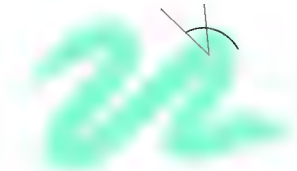
Symmetrical continuity.

**Smooth** As you move one tangent handle the other handle remains opposite but the distance between the point itself and the other handle is not changed.



Smooth continuity.

**Angle Locked** As you move one tangent handle, the other handle moves so that the angle between the two handles is maintained.



Angle Locked continuity.

**Unconstrained** Moving one tangent handle does not change the position of the other tangent handle at all.

Unconstrained continuity.

## Converting Points

The **Convert Node** tool changes a corner point, with tangent handles pulled in, into a curve point with tangent handles visible for manipulation. The same tool changes a curve point, with tangent handles visible, into a corner point with tangent handles retracted. It also changes the Node Continuity when used on a tangent handle.

- Click on a Bézier curve point to retract both the preceding and following tangent handles, turning it into a Bézier corner point.
- Click a standard B-Spline point to turn it into a B-Spline cusp point.
- Click a standard B-Spline cusp point to turn it into a standard B-Spline point.
- Drag on a Bézier corner point to turn it into a Bézier curve point and show its tangent handles.

The drag gesture determines the positions of the new tangent handles, just as drag behaves when drawing with the **Pen** tool.

Hold down the **Shift** key while dragging to constrain the angular relationship between the opposite tangent handle and the Bézier point.

Hold down the **Option/Alt** key before or during the drag gesture to lock the opposite tangent handle in its current position: the drag thus affects the position of one tangent handle only. If you release the **Option/Alt** key before releasing the mouse button, the opposite tangent handle snaps back into the position symmetrically opposite the tangent handle you have moved.

- Drag on a tangent handle to change its position or move it. This action causes the path segment to change.

  If the initial constraint is Unconstrained, the constraint is changed to Symmetrical. The two tangent handles are opposite each other and move appropriately as you drag.

  If the initial constraint is Symmetrical, Smooth or Angle Locked the constraint is changed to Unconstrained and the tangent handles move independently of each other as you drag.

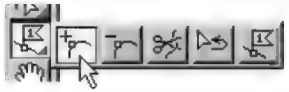
For more information on constraints, see ➤"Changing Point Continuity" earlier in this chapter.

## Adding Points

The **Add Node** tool allows you to add additional points to an existing path segment.

### To add additional points between existing points:

1. Click the **Path Tools** icon in the **Tools** toolbar and choose the **Add Node** tool.



The Add Node tool.

2. Click on a path segment.

   Adding a point to a B-Spline path converts the path to a Bézier path.

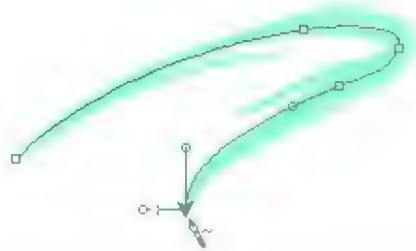
   Adding a point to an existing path segment does not affect the shape of the path.

   Clicking on a point has no effect.

### To extend an existing open path:

1. Select the drawing tool you want to use to extend a path from the **Tools** toolbar.

2. Position the cursor over the beginning or end point of an open path. A tilde (~) is added to the cursor indicating that any action will extend the line.



The cursor changes when positioned over an end or beginning point.

3. Click or drag on an end or beginning point to continue creating the path.

It is even possible to create a path with B-Spline controls for part of the shape and Polyline or other controls for a different part of the path.

## Deleting Points

The **Delete Node** tool allows you to remove points from an existing path segment.

**To delete a point:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.
2. Click the **Path Tools** icon in the **Tools** palette and choose the **Delete Node** tool.

The Delete Node tool.

3. Click on a point. The point is removed and the shape of the path changes accordingly.

## Splitting Paths

The **Split Path** (scissors) tool allows you to split an existing open path into two paths, or to open an existing closed path.

**To split a path:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.
2. Click the **Path Tools** icon in the **Tools** toolbar and choose the **Split Path** tool.

The Split Path tool.

3. Click on a path segment to define the point to split. The path splits at the point of the click.

Click on the path segment to split the path.

## Reversing Path Direction

Since the beginning point and the direction of a path are important considerations in how you apply Skeletal Strokes, Expression allows you to define which point is the beginning point as well as set the direction of a path.

### Changing the Starting Point

On a closed path such as a rectangle or circle, you may want to change the starting point for your path. This affects the way Skeletal Strokes are applied to the path.

**To select a different start point on a closed shape:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.



Select an object.

2. Click the **Path Tools** icon in the **Tools** palette and choose the **Change Start Point** tool.

The Change Start Point tool.

3. Click at the desired start point.

   If there is no existing point at the place you wish to designate as the new start point use the **Add Point** tool to add a point then use the **Change Start Point** tool to select the new point.

   Using the **Change Start Point** tool on an open path causes the path to become closed.

The starting point is now more appropriate.

## Changing the Path Direction

Expression allows you to change the direction of your path. This is especially useful with Skeletal Strokes that are not symmetrical.

There may be times when you want to reverse the direction of a path and other times when what you really want to do is mirror the image. For additional information on mirroring, see ➤"Mirroring Images," earlier in this chapter.

**To change the direction of the path:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object.

Select an object.

2. Click the **Path tools** icon in the **Tools** toolbar and choose the **Reverse Path** tool.

The Reverse Path tool.

3. Click the path you want to reverse. The path arrow changes direction. If a Skeletal Stroke was applied to the path, the stroke also reverses direction.

The direction of the path is changed.

You can also choose **Objects menu▸ Reverse Path** to reverse the direction of a path.

## Unstructuring Objects

Expression allows you to take a Skeletal Stroke that has already been applied to a path and unstructure the stroke so you can edit its shape.

Before you can unstructure a stroke applied to text, you must first convert the text to a path using the Convert to Path command. For more information on converting text to a path, see ➤"Converting Objects to Bezier Paths," later in this chapter.

**To unstructure a stroke:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an object with a Skeletal Stroke.

Select an object containing a Skeletal Stroke.

2. Choose **Object menu▸ Unstructure**. The Skeletal Stroke is converted to a path or group of paths that you can now edit.

An unstructured object.

## Converting Objects to Bézier Paths

There may be instances when it would be easier to start out with a regular text or shape object, such as a letter or an ellipse, then convert it to a Bézier path (or paths). This allows you to have more control over the shape of an object.

**To convert an ellipse or text object to Bézier:**

1. Using the **Object Selection** tool from the **Tools** toolbar, select an ellipse or text object.

Select an ellipse or text object.

2. Choose **Objects menu▸ Convert To Path**. The Selected object is converted to a Bézier path.

The selected objects are converted to Bézier paths.

You can select any object or combination of objects to work on separately. You can edit the shape of an individual letter by selecting a point with the **Node Selection** tool.

## Editing Ellipses

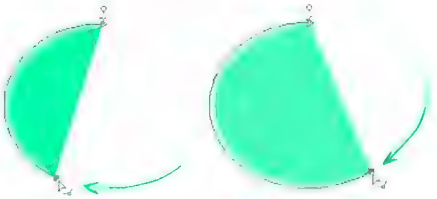
Unlike circles or ovals from other drawing applications, the Expression ellipse is a special case shape object. An ellipse consists of only one point. By dragging this point, you can create a partial ellipse.

### To create a partial ellipse:

1. Using the **Object Selection** tool from the **Tools** toolbar, select an ellipse.
2. Using the **Node Selection** tool, click the ellipse node to select it.

Select the ellipse node.

3. Drag the point to open up the ellipse.



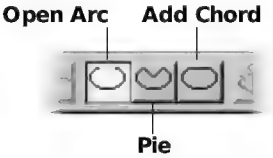
Drag to open the ellipse.

### To define the open ellipse style:

1. Using the **Object Selection** tool from the **Tools** toolbar, select an open ellipse.

Select and open ellipse.

2. Click an **Ellipse Closure Control** button from the **Actions** toolbar.




The Action toolbar, Ellipse Closure controls.

**Open Arc** No connection between the ends of the ellipse.

Open arc ellipse.

**Pie** A straight line segment connects each end of the ellipse with the center point of the ellipse.

Pie ellipse.

**Add Chord** A straight line segment connects each end of the ellipse with the other end.

Chord ellipse.

# 7

# Printing

You can print your Expression artwork on your desktop or networked printer in black and white or in full color. Because Expression is a vector-based draw program, your artwork will look great when printed at any size and resolution.

## Printing from Expression

Like other draw programs, Expression produces artwork which is vector-based. Unlike bitmap images, which simply consist of many colored pixels (dots), vector images consist of mathematically defined curves with control points. This is why Expression artwork is so highly editable, and why it prints beautifully at any size. However, because printers work by placing tiny dots of ink, toner, or dye on the page, a vector image must be converted to dots (rasterized) before it can be printed.

When you print artwork from Expression, you can let your printer rasterize the image, or you can have Expression rasterize the image before sending it to the printer. Which option you choose depends on the image itself and the capabilities of your printer. A checkbox in the Print dialog allows you to choose each time you print an image.

## Printing Images with Transparency

Because printers do not yet support transparency in vector images, the only way to preserve transparency when printing an Expression image is to have Expression rasterize the image before sending it to the printer. If you choose to let your printer rasterize an image with transparency, the transparency will simply be ignored; objects which are transparent will be printed as if they were opaque.

Many of the Natural-Media strokes included with Expression use transparency to achieve subtle effects, so your image may include transparency even if you have not explicitly applied it.

## Quality Considerations

Having Expression rasterize an image is generally the best way to ensure that the printed image will faithfully reproduce the image on screen. However, many images will look equally good when rasterized by your printer, and may require less time and system resources to print (see ➤"Performance Considerations," later in this chapter).

In general, it is best to rasterize your image at a resolution (dpi) one and a half to two times the linescreen frequency (lpi) of your printer. Most laser printers have a linescreen frequency of approximately 60 lpi. Most high-end image setters have a linescreen frequency of 100-150 lpi.

You may want to rasterize at lower resolutions when printing proofs to speed up the printing process. You will rarely, if ever, want to rasterize at a higher resolution (dpi) than your printer is capable of printing. If you are not sure of your printer's resolution (dpi) or linescreen frequency (lpi), consult the printer's documentation or contact its manufacturer.

Most printers are capable of rasterizing vector images, but not all printers rasterize images in the same way. Expression supports PostScript-compatible printers (Macintosh and Windows), PICT-compatible printers (Macintosh), and WMF-compati-

ble printers (Windows). PostScript printers tend to do a better job of rasterizing Expression artwork than non-PostScript printers, because non-PostScript printers do not support some Expression features (e.g., clipping, Bézier curves, and the Non-zero Winding rule for fills). As a result, certain Expression images may not print satisfactorily when rasterized by PICT- or WMF-compatible printers.

If you are not satisfied with a printed image which was rasterized by your printer, try printing the image again with the **Rasterize Before Printing** option enabled.

## Performance Considerations

When Expression rasterizes an image, your computer will be busy for a time (perhaps up to several minutes for a complex image printed at high resolution). However, once the image has been sent to the printer, it will print in less time, since the printer does not have to rasterize it.

In general, the total time required to print should be comparable whether the image is rasterized by Expression or by your printer; the option you choose simply determines how the printing task is divided between the computer and the printer. However, if you are running Expression on an older or lower-powered system, you may find that images print considerably faster when rasterized by your printer. Likewise, if your printer is older or less powerful, rasterizing the image before printing may yield faster results.

The amount of RAM and hard disk space available to Expression may also affect your choice. Expression requires additional memory to rasterize an image. If there is not sufficient memory available, a scratch disk is automatically used to temporarily store information. If you experience trouble when rasterizing an image in Expression, check to make sure that you have as much memory available to Expression as possible, and that you have some free space on your hard disk. If you are still unable to print the image, try printing with the **Rasterize Before Printing** option disabled (transparency and perhaps certain other features of your artwork will not be supported in this case, as explained in ➤"Printing Images with Transparency," earlier in this chapter).

## Printing Color Separations of Expression Artwork

Expression does not directly support color separations. However, Expression artwork can be exported in either bitmap or vector format and separated in another application. When you export for separations, some of the printing limitations described above apply, most notably the fact that vector formats do not support transparency.

If you want to produce separations from an image which includes transparency, you should export the image in a bitmap format. It can then be converted to CMYK and separated in an image editing application. For more information on exporting, see ➤"Opening and Saving Documents" in Chapter 1, "Overview of Expression."

## Printable Area

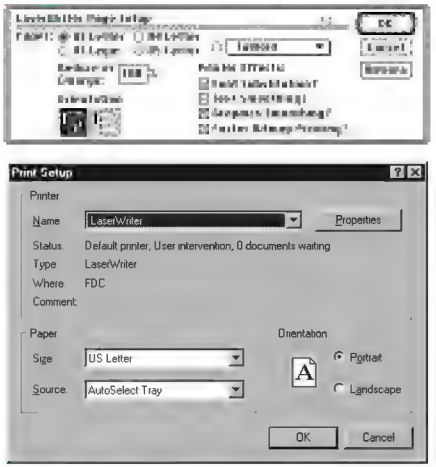
Each printer and paper size combination has a specific printable area associated with it. Expression allows you to place artwork elsewhere but only the artwork within the printable area prints.

Generally, place your artwork inside the Workspace within the Expression document window. If you change your printer you need to check that your artwork still lies within the confines of the printable area.

Expression's printable area.

### To set up your printer:

1. Choose **File menu▸ Printer Setup.** The standard printer setup dialog appears. This dialog varies depending on the printer driver you are using.




The Printer Setup dialogs, Macintosh and Windows.

2. Make your selections as needed.

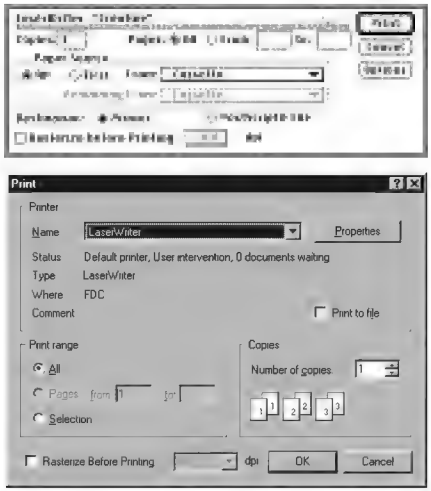
3. Click **OK**.

# Printing Your Work

Expression allows you to print to most color and black and white printers. Some print options vary depending on the printer and driver you choose.

**To print:**

1. Choose **File menu▸ Print**. The standard Print dialog appears. This dialog varies depending on the printer driver you are using.




The Print dialogs, Macintosh and Windows.

2. Select **Rasterize Before Printing** if desired, and select a resolution. For more information regarding this option, see ➤"Printing from Expression," earlier in this chapter.

3. Follow the directions for your particular printer.

4. Click **Print**.

# A

# Technical Tips

Fractal Design Corporation has thoroughly tested Fractal Design Expression to ensure that it runs correctly with most Macintosh and Windows software and hardware. If you experience a problem with Expression, first complete the steps given in "Before You Call Technical Support." Then refer to the list of commonly asked questions and their answers. If you cannot resolve the problem, please see the end of this appendix for information on how to contact Technical Support.

## Before You Call Technical Support

When you first experience a problem with a software program you might be able to find the solution yourself without calling Technical Support. If you do call Fractal Design Technical Support, please have the following information available. Filling out the Troubleshooting Worksheet included as the last page of this chapter will also be helpful.

1. Which Fractal Design product are you using?

2. Which version?

   **Macintosh** Look under the Apple menu if the program is running or highlight the application icon and choose **File menu▸ Get Info**.

   **Windows** Look under the **Help menu▸ About Expression**.

3. What is your serial number? (See the label attached to the Read This First card or the Registration card)

4. What kind of computer are you using?

5. How much RAM does your computer have?

6. What kind of problem are you having?

7. Do you get an error message? If so, what message?

8. Is there anything unusual about your computer set up? Do you have a special video card or accelerator, for example.

9. Do you have a CD-ROM player? When was it last used?

10. Are you running virus protection or disk compression software, and if so, what products are you using?

Once you have answers to the above questions, call Fractal Design Technical Support. To investigate the problem yourself, look below for instructions based on your computer platform.

### Macintosh

The most common cause of problems when running Macintosh software is a conflict with Extensions.

**To find out if an Extension conflict is causing a problem:**

1. Restart the computer while holding down the Shift key.

2. When you see the message "Welcome to Macintosh. Extensions off." release the Shift key.

3. Run the software to see if the problem still occurs.

4. If the problem goes away when you start the computer with Extensions off, you know that the culprit is an item in the Extension folder or Control Panel. Once identified, it is usually just a matter of getting the most current version of the product to solve the problem permanently. Or the problem may be solved by replacing the extension or its preferences.

**To identify the item that causes the conflict:**

1. **System 7.5** Choose **Apple menu▸ Control Panels▸ Extensions Manager**. If you need more instructions than what appears in this control panel, see your System 7.5 documentation. After turning off one half of your extensions, go to Step 2.

   **Pre-System 7.5** Create a new folder and name it Extensions Off. Open the Extension folder and drag half of the items from the Extension folder into the new folder.

2. Restart your computer in the usual way. See if the problem still occurs. If the problem persists, go to step 3. If the problem is solved, go to step 4.

3. If the problem still occurs you know the culprit is still active. Turn off or remove half of the still active extensions and repeat step 2.

4. **System 7.5** If the problem goes away, you know that the extension is turned off. Turn half of the extensions back on. If a problem still occurs, turn off half of the remaining extensions. Keep turning extensions on or off until you zero in on the extension that causes the problem.

   **Pre-System 7.5** If the problem goes away, you know the culprit is in the Extensions Off folder. Whichever folder contains the culprit, cut that group in half and restart again. Keep cutting the group in half until you zero in on the extension that causes the problem.

5. If you get all the way through the Extensions folder without locating the item that causes the problem, it is possible that the culprit is in the Control Panels folder.

6. Follow the same procedure with the Control Panels folder, starting by removing all items that are not included in Apple's standard system.

7. If you identify the problem as an Extension or a third-party Control Panel device, contact the developer of that software to verify that you have the most current version.

   If you have the most current version, contact Fractal Design Technical Support. We will want to have the name and phone number of the developer's technician you spoke with so we can work with them to create a permanent solution.

8. If the problem is identified as an Apple Control Panel, contact Fractal Design Technical Support.

## Windows

If you are running Windows, sometimes there is a video driver incompatibility. The solution is easy so try this test to see if your problem is caused by a video driver.

### Windows NT 3.5

1. Close all applications except Windows.

2. In your Main directory, locate and double-click the icon labeled **Windows Setup**.

3. Write down the current Display setting so you can return to it after this test.

4. Choose **Options menu▸ Change System Setting**.

5. Where it shows **Display**, scroll down and select plain vanilla VGA.

6. Restart Windows.

7. Run Expression to see if the problem persists.

   If the problems are gone, you know the cause was the video driver. Contact the manufacturer of your video card to get the most current video driver. Some manufacturers change drivers every few months. The new version is most likely free and can usually be downloaded from a bulletin board or on-line service.

### Windows 95/Windows NT 4.0

1. From the **Start** menu, choose **Settings▸ Control Panel**.

2. Double-click **Display** and select the **Settings** tab.

3. Click **Change Display Type /Record Adapter Type**.

4. Click **Change under Monitor Type** and select **Show All Devices**. Make a note of the current setting so you can return to it after this test.

5. Scroll to **Standard Monitor Types** and select **Standard Display Adapter (SVGA)**.

6. Click **OK**.

7. Turn off hardware graphics acceleration by going to the **Control Panel▸ Performance** tab.

8. Click the **Graphics** button then set it to **None**.

If running under SVGA does not solve the problem or if the manufacturer verifies that you are running the most current driver, contact Fractal Design Technical Support.

## Set Up

**Q:** The Expression installer does not install Expression on my machine. What can I do?

**A:** Try the following:

1. Do you have enough hard disk space? To install the default Expression package including the tutorial files, you need to have 10MB of hard drive space reserved for program files.

   To install the full collection of Skeletal Strokes, you will need considerably more space—run the Expression Installer from the CD to see the exact requirements. If possible, you should also have several megabytes of free hard drive space. Expression makes use of free space when printing or rasterizing high resolution images.

2. **Macintosh** If you have enough hard drive space and are still having problems, use Extension Manager to turn off all extensions except Apple CD. Then reinstall Expression.

   **Windows** If you have enough hard drive space and are still having problems, try rebooting the computer with the following turned off:

   - Any virus protection software.
   - If you are using disk compression, try installing to an uncompressed volume.

3. Reinstall Expression. If installation is still unsuccessful, contact Fractal Design Technical Support.

### TSR Programs (Windows)

**Q:** What is a TSR (Terminate and Stay Resident) application?

**A:** A TSR or memory resident application is a program or driver that stays in memory once it is loaded and works in the background. The program normally responds only to a specific command or event (such as the deletion of a file or a specific key stroke combination).

**Q:** How can I turn some or all TSR's off?

**A:** To turn off TSR's:

**Windows 95:**

1. Press **Control-Alt-Del**.
2. End all tasks other than Explorer.

Once the computer restarts, start Windows then start Expression.

If the problem persists, even with TSR's off, contact Fractal Design Technical Support.

**Q:** Can TSR's cause conflicts and how can I resolve them?

**A:** TSR conflict occurs when a specific TSR conflicts with another TSR, application or a function within an application. You can resolve a possible TSR conflict by:

1. Restarting the computer with only those TSR's turned on that are required to run Windows.

2. Retry the operation. If the conflict does not recur, the problem is probably caused by a TSR conflict.

If restarting with TSR's off resolves the problem, a TSR conflict is probably the cause of the original problem. Try to identify the specific TSR or combination of TSR's that cause the problem. Once identified, verify with the manufacturer that the version is up-to-date. Then contact Fractal Design Technical Support for additional instructions.

## Contacting Technical Support

**Q:** How can I contact Technical Support?

**A:** Make sure that you register your copy of Expression so you can benefit from Fractal Design Technical Support.

**Please fill out the Troubleshooting Worksheet included at the end of this book before contacting Technical Support.**

Fractal Design Technical Support encourages you to use the Troubleshooting Worksheet before you contact Technical Support. Having the information ready not only makes it easier to find a solution—sometimes the questions help you solve the problem. Feel free to make copies of the form. You can fax it to us and we will then contact you, or have it ready when you call us. Always include this information in your email.

Many of the Technical Support questions you have may already be answered on-line at our Website in the Support section. If you have access to the Internet, please check there first. You can also use our on-line forms to contact us via email.

### Internet

www.fractal.com

## Other Ways to Contact Technical Support

### email

mac_support@fractal.com
win_support@fractal.com

### America Online

Keyword: Fractal

### Phone

(408) 430-4200 8:00 AM to 5:00 PM
Monday through Friday

### Fax

(408) 438-9672
Attn.: Technical Support

### Mail

Fractal Design Corporation
Attn: Technical Support
P.O. Box 66959
Scotts Valley, CA 95067-6959

If corresponding by fax, internet or email, always include your full name, address, and a telephone number where you can be reached. Never post such information on a public discussion board.

# B

# Glossary

This appendix contains terms used throughout this User Guide and in the Expression application. Refer to the Index for more information on where the term is used.

**additive color model** The color model which describes color based on direct light or transmitted light (as in television or computer screens). The RGB model is additive. All color values set to their highest, create white. See also Subtractive color model.

**alpha channel** An extra color channel which provides an 8 bit mask so that you can composite your image with other bitmap images in an application such as Fractal Design Painter or Adobe Photoshop.

**anchor point** A point, or set of coordinates defining a position which remains constant as an action or transformation occurs.

**anchoring** A technique that allows the user to constrain specific points of a stroke so selected parts of the picture are not distorted as the Skeletal Stroke is applied along the path.

**angular interpolation** When using the Blend Path command, interpolates the angle and distance between consecutive points instead of interpolating the positions of the nodes explicitly. This sometimes results in more shape constancy along the steps of the blend.

**aspect ratio** The length of a line as compared to the width of the stroke.

**anti-aliasing** The process of removing the jagged stairstepped edges (aliasing) which are typical of bitmap images. When you save an Expression image as a bitmap, Expression automatically anti-aliases the image to make its edges smooth. Disable the Anti-aliasing option when saving to override this default.

**Back minus Front** Creates a new path that contains areas in the back path that are not overlapped by areas in the front path.

**base objects** The objects and layers beneath a mask object. Once a mask is clipped out of the base objects, only the clipped portion remains visible.

**Bézier curves** The Pen tool is used to create Bézier curves. Bézier curves define the shape of the path by a combination of point position and tangent handle position.

**bitmap** Bitmapped artwork is defined by a grid of pixels. There is no outline. Resizing such an image may result in stairstepped edges. Graphics created by Fractal Design Painter, Adobe Photoshop, scanned images and other paint programs are examples of bitmapped artwork.

**Blending** The **Blend Path** command creates a series of new paths based on two different source paths. After you define the number of step, Expression automatically generates the new paths whose characteristics are determined by the characteristics of the source paths. Both geometry (shape) and paint characteristics (color, width, transparency, etc.) are interpolated.

**Boolean Operation** Allows you to create closed paths based on the area enclosed by two source paths. Unite, Intersect, Front minus Back and Back minus Front are the Boolean functions supported by Expression.

**bounding box** An onscreen aide which is the smallest rectangle that can completely enclose a selected object or group of objects. The bounding box includes invisible points such as tangent and shear/width handles.

**B-Spline** A type of smooth curve commonly used in computer graphics. A B-Spline curve is defined by a set of control points governing the shape of the curve, while the control points might not necessarily lie on the curve itself.

**caps** Defines the way Expression displays the end points of an open path. Expression can display a stroke with a flat cap, round cap or square cap.

**clip** See mask.

**closed path** A path wherein the start and end point are at the same location, such as a circle, rectangle or polysided object. Or a path that completely encompasses some area.

**colorize** Applies color to black and white artwork or changes the color scheme of an object by substituting the primary colors with new colors.

**color separation** Creates separate pieces of film or printed image for each color of ink used in the artwork.

**Color Table** A visual representation of colors from which the user may select a color to apply to an object.

**compound path** A compound path is a path that describes an object made from two or more shapes, wherein one shape cuts a hole or void in the other. The letters "A" and "O" are examples of compound shapes.

**corner point** A vector point (node) with both tangent handles retracted. Since the tangent handles are at the same location as the node itself, they can not be seen when the node is selected. A corner point defines an angle intersection of two line segments, rather than a curved intersection.

**curve point** A vector point (node) with tangent handles extended and visible when the node is selected. A curve point defines any intersection of two line segments other than an angle. The angle and distance of the tangent handles define the shape of the adjoining line segments.

**cusp point** A point on a curve at which a point tracing the curve would abruptly change its direction of motion. In Expression, this term is used to describe a corner point of a B-Spline or Bézier path. Generally a B-Spline path is all smooth, but a cusp point can be created by **Option**-click.

**Even-Odd rule** On any shape where a path crosses itself, or where one path encloses another path, Expression must decide which areas to fill and which to leave empty. The Even-Odd rule determines whether a point is inside a path (and therefore filled) by drawing a ray from that point in any direction and counting the number of path segments that the ray crosses. If the number is odd, the point is inside; if even, the point is outside. See also Non-Zero Winding Number rule.

**fill** Color or pattern used to define inside areas of an object as in stroke and fill. On an open path, an imaginary straight line connects the beginning and ending points to specify which areas are inside the stroke and therefore contain the fill color or pattern.

**Freehand tool** The Freehand tool allows you to create paths by freely drawing with the mouse or tablet stylus.

**Front minus Back** Creates a new path that contains areas in the front path that are not overlapped by areas in the back path.

**gamut** An entire range or series. In Expression the term gamut refers to the gamut of printable colors, that is, the whole range of printable colors.

**Graphic Element stroke** A vector picture used as a stroke.

**grayscale** An image consisting entirely of shades of gray.

**handle** See tangent handle, shear/width handle, Resize handle or transformation handle.

**hatching** A pattern of strokes whose characteristics vary based on the contrasting lightness/darkness of the source imagery beneath it. It is a technique to mimic pen and ink drawing or woodcut prints.

**HSL color model** Refers to Hue, Saturation and Lightness. This is the color model that artists use to describe color.

**Hue** Basic color family, such as red, green, etc.

**Interpolate** Estimate values inserted between specifically defined values.

**Intersect** Creates a new path that contains areas where the selected source paths overlap. Areas and paths that do not overlap are ignored.

**keyframe** Specific image (view) in a Multi-view stroke. Expression automatically interpolates views between keyframes.

**Lightness** The property which makes color appear to reflect or transmit more or less light. A color with no lightness appears black. A color with full lightness appears white.

**linear interpolation** When using the Blend command, each pair of corresponding points is interpolated without regard to its relationship with other pairs of points.

**marquee** A dotted rectangle indicating a selected area.

**mask** A mask or clipper allows only those objects or parts of objects that lie inside the mask path to be seen. The topmost object is used as the mask and its original fill is discarded. Strokes and fills from objects on lower layers are shown in the masked area only.

**Multi-view stroke** A stroke composed of two or more pictures or keyframes. Expression automatically interpolates the between views. A Multi-view stroke can also be saved as an animation.

**Natural Media stroke** A stroke that mimics traditional artist tools and brushes.

**node** A control point or vector point, used to define the shape of an object.

**Non-Zero Winding Number rule** On any shape where a path crosses itself, or where one path encloses another path, Expression must decide which areas to fill and which to leave empty.

The Non-zero Winding Number rule determines whether a point is inside a path (and therefore filled) by drawing a ray from that point to infinity in any direction then evaluating the places where a segment of the path crosses the ray. Starting with zero, you add one each time a path segment crosses the ray from left to right and subtract one each time a path segment crosses the ray from right to left. After counting all the crossings, if the result is zero, then the point is outside the path. If the result is anything other than zero, the point is inside the path and is filled. See also Even-Odd rule.

**open path** A path with distinct beginning and ending points; not a closed shape.

**original path** The source path for objects of cloning or Boolean operations.

**path** A path is a continuous line made up of one or more curved or straight path segments. Each path segment is defined by two or more points (nodes) which can be edited.

**pixel** Small, discreet points on the computer screen. Computer images are composed of pixels.

**point** See node.

**PostScript** The printer description language created by Adobe Systems Incorporated and used by most high quality printers, PostScript defines the appearance of type and images on the printed page.

**preferences** User definable options located under **File menu▸ Preferences** that allow you to customize the way Expression behaves.

**progressive color bar** A printed sample of the standard color combinations used in Color Monitor Calibration. Includes Cyan (C), Magenta (M) Yellow (Y), Cyan-Magenta (CY), Cyan-Yellow (CY), Magenta-Yellow (MY), Cyan-Magenta-Yellow (CMY), White and Black (K).

**rasterize** To convert vector (outline) information into bitmap information for a non-PostScript printer or for use in bitmap imaging application.

**Resize handles** Triangles shown at each corner of the imaginary bounding box of selected object(s). Drag to resize selection. A preference controls whether or not Resize handles are visible.

**resolution** Number of pixels per inch when referring to monitor screen. Number of dots per inch when referring to printer output.

**Saturation** Describes the intensity of color. Less saturation results in a muddy color, more saturation results in a clear, intense color.

**Selection** Object(s) currently active and ready to be acted upon.

**shear/width handle** Controls a Skeletal Stroke's shear and width. The angle of the handle from the point controls shear. The distance of the handle from the point controls width.

**Skeletal Stroke** A simple or complex picture that has been defined as a stroke.

**source imagery** Original artwork used for hatching. Hatching is applied based on the grayscale value of the source imagery.

**source path** Original artwork used for blending or for Boolean operations.

**stroke** A mark or path made by a single movement of an instrument. Also refers to the outline or edge of a piece of artwork, as in stroke and fill. Traditionally an artist defines an area with a stroke then fills the area with color or pattern. The stroke itself may have particular attributes, such as width and color assigned to it.

**stylus** A pen-like tool used when drawing with a digitizing tablet.

**subtractive color model** The color model which describes color based on reflected light, such as when using pigment. The CMYK model is subtractive. All CMY values set to their highest create black. See also additive color model.

**tablet** A computer accessory that replaces the standard computer mouse input device with a flat tablet and stylus. Clicking and dragging with the stylus on the tablet moves the cursor on the monitor. Some tablets also include a pressure sensitive function so strokes drawn respond differently based on the amount of pressure applied while drawing.

**tangent handles** Each vector point (node) of a path includes two tangent handles that control the shape of the path as it moves from the vector point to the next or previous vector point. On a corner point, the tangent handles are retracted and placed at the same coordinates as the point itself and so are not visible.

**tint** A variation of a color produced by adding white. A 100% tint includes no white. A 0% tint is completely white.

**transformation handles** Paired arrows shown at the midpoint of the right, left, top and bottom of the imaginary bounding box of selected object(s). Drag to shear selection. Drag while holding down the **Shift** key to rotate selection. A preference controls whether or not Resize and transformation handles are visible.

**Union** Creates a new path based on the outline of all selected source paths as if they were merged into one object. Paths inside are ignored.

**vector** Vector artwork defines an image by placing points then using the vector points' tangent handles to control the path that connects the points. Since the information is always mathematical, vector artwork is resolution independent, printing out beautifully at any size.

# Index


## A

Accumulated transformations 143
Actions toolbar 12
Active layers 155
Active Perspective Frame 142
Actual Size command 22
Add Chord button 13, 163
Add Node tool 7, 158
Adding points 158
Additive color model 82, 93
    defined 178
Address ix, 175
Adjusting, pressure sensitivity 76
Adobe Illustrator
    exporting 31
    importing 30
Adobe Photoshop, exporting 31
Align command 149
Aligning objects 147
Alignment command 152
Alignment palette 19, 149
Alignment, preferences 27
Alpha channel 178
America Online address 175
Anchor at End button 14, 119
Anchor at Fixed Point button 14, 119
Anchor at Start button 14, 119
Anchor Control tools
    Anchor at End button 14, 119
    Anchor at Fixed Point button 14, 119
    Anchor at Start button 14, 119
    Free Anchor button 14, 119
Anchor point, defined 178
Anchor to End command 119
Anchor to Start command 119
Anchor tool 12, 118, 119, 120
Anchor/Repeat tools
    Anchor tool 12, 118, 119, 120
    Repeat tool 53, 120, 122
Anchors
    creating 118
    defined 178
    moving 120
    removing 119
Angle Locked button 13, 157
Angle Locked continuity 157
Angular interpolation
    blends and 73
    defined 178
Animations
    resolution 127
    saving 32
    saving as 126
    speed 127
Anti-aliasing 32, 127
    defined 178
Applying
    colors 79
    gradient fills 111
    Gradient strokes 89, 102
    hatching 114
    pattern fills 111
    Skeletal Strokes 102
    solid fills 110
    strokes 103
    transparency 98
Arcs, creating 162
Arrange Icons command 22
Arranging
    objects 147
    windows 22
Aspect ratio
    defined 178
    Multi-view strokes 127
Attribute Dropper tool 88
Attributes
    copying 88
    corners 101
    endpoints 102
    Gradient strokes 89, 102
    strokes 99
Auto apply 98
AVI, saving as 32

## B

Back minus Front
    defined 178
    operations 72
Back-Front button 16, 72
Base objects
    defined 178
    masking and 70
Bevel join 102
Bézier paths
    converting to 162
    creating 62
Bézier pen 178
Bitmaps
    defined 178
    exporting 31
    understanding 28
Blend button 74, 75

Blend Paths button 15, 74
Blend Paths command 74, 75
defined 178
Blending
multiple paths 75
paths 73
BMP file format, exporting 31
Boolean operations
defined 178
preferences 26, 72
using 71
Boolean Operator buttons 15, 73
Bounding box 135, 178
B-Spline objects
creating 63
defined 178
B-Spline tool 9, 63

## C

Calibration, color 95
Caps
defined 178
editing 102
Cascade command 22
Center View command 22
Center Zoom command 22
CGM
exporting 31
importing 30
Change Start Point tool 8, 160
Circles
creating 66
Circles, creating 66
Classic Drawing tools 8
Freehand tool 8, 61
Pen tool 8, 62
Clipboard, importing 30
Clipper 70
Clipper command 71
Clipping
objects 70
releasing objects 71
Clone command 146
Cloning objects 146
Close command 34
Closed path
defined 178
understanding 60
Closing, documents 34
CMYK colors, creating 82
Color Dropper tool 10, 87
preferences 27
Color match, preferences 26
Color models
selecting 79
using 79
Color palette 18, 78
CMYK tab 83
HSL tab 79
preferences 27
RGB tab 82
Color separations 85, 179
Color Table command 84
Color tables
creating 83
defined 179
displaying 78
editing 83
loading 84
saving 84
sorting 85
Colorize tab 93
Colorizing
defined 178
Multi-view strokes 92
objects 92
removing 94
Colors
calibration 95
CMYK 82
copying 87
custom 85, 86
fixed width strokes, and 100
gradients 89
HSL 79
layers and 155
RGB 82
saving 84
Skeletal Strokes 92
substitution 114
Commit Transform command 144
Compatibility, file format viii
Composition toolbar 6
Compound Object command 69, 70
Compound path
defined 179
understanding 60
Compound shapes
creating 68
filling 69
Compression, video 128
Constraining objects 133
Continuity
angle locked 157
smooth 157
symmetrical 157
unconstrained 157
Continuity, node 156
Conventions, manual ix
Convert Node tool 7, 158
Convert To Path command 147, 162
Converting
points 158
to Bézier paths 162
Copy button 6
Copy command 31

Copying
attributes 88
colors 87
fills 88
strokes 88
CorelDRAW!
exporting 31
importing 30
Corner
attributes 101
handles 133
points 62, 179
Creating
anchors 118
arcs 162
Bézier paths 62
B-Spline objects 63
circles 66
CMYK colors 82
color tables 83
compound shapes 68
custom colors 86
dashed lines 100
dashes 101
documents 20
ellipses 66
Freehand paths 61
HSL colors 79
layers 153
lines 65
Multi-view strokes 122
new view 24
ovals 66
paths 59
patterns 111
polyline objects 63
rectangles 65
RGB colors 82
Skeletal Strokes 103, 116
smoothed polyline objects 64
squares 65
text objects 66
Curve points 62
defined 179
Cusp points
B-Splines 158
defined 179
understanding 64
Custom Color palette 18, 86
Custom colors
creating 86
defining 86
deleting 87
selecting 86
tint 87
using 85
Cut button 6

## D

Dashed lines 100
Dashes
creating 101
editing 101
Define Stroke command 117
Defining
custom colors 86
patterns 111
Skeletal Strokes 116
Definition tools 11
Pattern Definition Box tool 11, 112
Stroke Definition Box tool 11, 116, 123
Delete Node tool 7, 159
Delete Selection button 6
Deleting
custom colors 87
layers 153
patterns 113
points 159
views 125
Deselect All button 6, 133
Deselecting object 133
Direction, paths 160
Disable Pressure Sensitivity button 14, 76
Displaying
grids 21
rulers 21
toolbars 5
Distributing objects 149
Docked toolbars 5
Documents
closing 34
creating 20
opening 30
renaming 33
resolution 29
saving 31
Dots per inch (dpi), setting 29
Down One button 6
dpi, setting 29
Dropper tools 10
Attribute Dropper tool 10, 88
Color Dropper tool 10, 87
Duplicate command 145
Duplicating
clones 146
objects 145

## E

Edit Stroke Definition command 117, 127
Editing
caps 102
color tables 83
corners 101
dashes 101

ellipses 162
Gradient strokes 89, 102
gradients 89
Multi-view strokes 108
paths 156
points 156
Skeletal Strokes 105, 117
strokes 99, 117
Ellipse Closure controls 13
Add Chord button 163
Open Arc button 163
Pie button 163
Ellipse tool 10, 66
Ellipses
creating 66
editing 162
Enable Pressure Sensitivity button 15, 76
Endpoints
attributes 102
caps 102
EPS file format, exporting 31
Even-Odd rule
defined 179
using 69
Exit command 34
Exiting 34
Exporting
Adobe Illustrator files 31
Adobe Photoshop files 31
bitmap graphics 31
BMP files 31
CGM files 31
CorelDRAW! 31
EPS files 31
JPEG files 31
movies 31
PCX files 31
PhotoPaint files 31
PICT files 31
Targa files 31
TIFF/TIF files 31
transparency and 29
vector graphics 31
WMF files 31
Extensions, conflicts with 172


## F


Fax number, Fractal 175
Fill tab 110
Filling
compound shapes 69
objects 109
Fills
copying 88
defined 179
gradient 88, 111
patterns 111
preferences 27
solid 110
Fixed width strokes 100
Flat cap 102
Floating toolbars 5
Font command 67
Font palette 19
Fractal Design ix
address 175
America Online address 175
Fax number 175
Internet address 175
MSN address 175
technical support 172, 175
Free Anchor button 14, 119
Free Anchor command 119
Freehand paths
creating 61
editing 136
Freehand tool 8, 61
defined 179
preferences 27
pressure sensitivity 76
Front minus Back
defined 179
operation 72
Front-Back button 15, 72


## G


Gamut
Color palette 80
defined 179
Grabber tool 8, 23
Gradient Editor palette 19, 90
Gradient tool 10, 89
Gradients
applying 88, 89, 102
attributes 89, 102
colors, and 89
editing colors 89
fills 88, 111
linear 91
radial 91
strokes 88
Graphic Element strokes
defined 179
understanding vii, 3
Graphics
exporting 32
importing 30
Grayscale 179
Greeking 27
Grids
displaying 21
hiding 21
preferences 27
Group command 145

Group Selection tool 7, 132
Grouping objects 144

## H

Handles
corner 133
defined 179
preferences 25
Repeat frame 121
Resize 135, 137
Shear/Width 106
tangent 156
transformation 133
Hatch command 115
Hatching
applying 114
defined 179
understanding 114
Hiding
grids 21
layers 153
rulers 21
HSL colors
creating 79
defined 179
understanding 79
Hue 79, 179

## I

Importing
Adobe Illustrator files 30
CGM files 30
clipboard 30
CorelDRAW! files 30
graphics 30
PICT files 30
text 30
vector graphics 30
WMF files 30
Info command 153
Installation, problems with 174
Internet address ix, 175
Interpolate
blends and 73
defined 179
Intersect 179
Intersection button 16, 72
Intersection operations 72
Invisible strokes 99

## J

JPEG file format, exporting 31

## K

Keyframe
defined 179
Multi-view strokes and 123

## L

Launching Expression 2
Layer command 153
Layering objects 152
Layers
changing the active 155
color 155
creating 153
deleting 153
hiding 153
locking 154
naming 155
unlocking 154
Layers command 153
Layers palette 19, 153
Length Angle interpolation 74
Lightness 79
Line tool 9, 65
Linear gradient 91
Linear interpolation
applying 74
defined 179
Lines
creating 65
dashed 100, 101
Linescreen frequency 166
Locking layers 154

## M

Magnifier tool 8, 22
zooming in and out 22
Make Non-repeating button 14, 122
Make Nonrepeating command 122
Make Repeating button 14, 120
Make Repeating command 120
Marquee
defined 180
selecting 132
Masking
defined 180
objects 70
Mirror tab 140
Mirror tool 10, 140
Miscellaneous toolbar 15
Miscellaneous tools
Back-Front button 16, 72
Blend Paths button 15, 74
Front-Back button 15, 72
Intersection button 16, 72
Union button 15, 72
Miter join 101

Models
additive 93
color 79
subtractive 93
Modes
ribbon 106
sausage 106
Skeletal Strokes 105
Monitor, resolution 29
Movies
exporting 31
saving 31
Moving
anchors 120
images 23
Multi-view stroke views 126
objects 133, 136
points 156
toolbars 5
MSN address 175
Multiple paths, blending 75
Multiple windows 21
Multi-view strokes
adding views 124
animating 126
colorizing 92
creating 122
defined 180
editing 108
moving views 126
saving 32, 126
Shear/Width handle 125
understanding vii, 3

## N

Naming
documents 33
layers 155
Natural-Media strokes
defined 180
understanding vii, 3
New
command 2, 4, 20
documents 20
New command 2
New File button 2, 5
New Stroke Definition command 116, 123
New View command 24
New view, creating 24
Node Continuity controls 12
Angle Locked button 157
Smooth button 157
Symmetrical button 157
Unconstrained button 157
Node Continuity Mode command 157
Node Selection tool 7, 156
Node tools 7
Convert Node tool 7, 158
Node Selection tool 7, 156
Nodes
defined 180
See also, Points
None Continuity controls 157
Non-Zero Winding rule 69
defined 180

## O

Object Selection tool 7, 132
Objects
aligning 147
arranging 147
cloning 146
colorizing 92
constraining 133
deselecting 133
distributing 149
duplicating 145
filling 109
grouping 144
layering 152
masking 70
moving 133, 136
resizing 137
rotating 138
scaling 133, 137
selecting 132, 133, 134
shearing 141
stacking 151
transforming 136
ungrouping 145
unstructuring 161
viewing 135
Opacity 98
Open Arc button 13, 163
Open command 30
Open File button 5
Open path
defined 180
understanding 60
Opening, documents 30
Origin, text object 68
Original path 115
defined 180
keeping 72
Output device, resolution 29
Ovals
creating 66
editing 66

## P

Page, sizing 20
Paint Style palette 17, 70, 98
Colorize tab 93
Fill tab 110

Stroke tab 99
Palettes 16
Alignment palette 19
Color palette 18
Custom Color palette 18
Font palette 19
Layers palette 19
Paint Style palette 17
Panner palette 18
Stroke Warehouse palette 18
Transformation palette 19
Panner palette 18
Paste button 6
Path Operations command 73
Path tools 7
Add Node tool 7, 158
Change Start Point tool 8, 160
Delete Node tool 7, 159
Reverse Path tool 8, 160
Split Path tool 7, 159
Path view 135
Pathfinder operations 15
Paths
blending 73
creating 59
defined 180
direction 160
editing 156
reversing 160
splitting 159
tagging 74
text on 67
understanding 60
Pattern Definition Box tool 11, 112
Patterns
color substitution 114
creating 111
fills 111
hatching 114
preferences 27
removing 113
saving 113
scaling 115
strokes and 114
transforming 112
patterns and 115
PCX file format, exporting 31
Pen tool 8, 62
Perspective 142
Perspective Control Frame 142
Perspective tool 11, 142
Phone number ix, 175
PhotoPaint file format, exporting 31
PICT file format
exporting 31
importing 30
Pie button 13, 163
Pixels, defined 180
Plug-ins 28
Points
adding 158
continuity 156
converting 158
corner 62
curve 62
defined 180
deleting 159
editing 156
moving 156
selecting 132, 134, 156
viewing 135, 136
Polyline objects, creating 63
Polyline tool 9, 63
PostScript
defined 180
printers 166
Preferences
alignment 27
Boolean operations 26, 72
Color Dropper tool 27
color match 26
Color palette 27
defined 180
fills 27
Freehand tool 27
grids 27
handles 25
patterns 27
Stroke Warehouse palette 27
undo 27
view 27
Pressure Sensitivity controls 14
Disable Pressure Sensitivity button 14, 76
Enable Pressure Sensitivity button 15, 76
Pressure sensitivity, setting 76
Preview view 135
Print button 6, 169
Print command 169
Printable area 168
Printer resolution 166
Printer Setup command 168
Printing
images 169
performance 167
quality 166
rasterized images 166
resolution 166
separations and 168
transparencies and 166
Progressive color bar
color calibration 96
defined 180

## Q

QuickTime
- animation 126
- compression 128
- saving as 32

Quit command 34
Quitting 34

## R

Radial gradient 91
Randomizing Skeletal Strokes 108
Rasterize
- defined 180
- graphics 28

Ratio, zoom 22
Rectangle tool 10, 65
Rectangles, creating 65
Redo command 34
Registration 2
Releasing, clipped objects 71
Removing
- anchors 119
- colorization 94
- patterns 113

Removing, views 125
Renaming, documents 33
Repeat Accumulated Transform
  - command 144

Repeat frame 121
Repeat Last Transformation
  - command 143

Repeat tool 12, 53, 120, 122
Repeating
- strokes 120
- transformations 143, 144

Repeating Control tools 14
- Make Non-repeating button 14, 122
- Make Repeating button 14, 120

Repeating Skeletal Strokes 120
Reset Transform command 144
Resize handles 133, 135, 137
- defined 180

Resizing
- objects 137
- toolbars 5

Resolution 29
- animation 127
- defined 180
- document 29
- monitor 29
- output device 29
- printing 166

Reverse Path command 161
Reverse Path tool 8, 160
Reversing paths 160
Revert to Saved command 34
Reverting 34
RGB colors 82
Ribbon mode 106
Rotate tab 139
Rotating objects 138
Rotation tool 10, 139
Round
- cap 102
- join 102

Rulers
- displaying 21
- hiding 21

## S

Saturation 79
- defined 180

Sausage mode 106
Save As command 31, 33
Save Bitmap command 32
Save command 31
Save File button 6
Save Stroke as Movie command 33, 127
Saving
- animations 32
- AVI format 32
- color tables 84
- colors 84
- documents 31
- Multi-view strokes 32
- patterns 113
- QuickTime format 32
- strokes as animation 126

Scale tab 138
Scale tool 10, 138
Scaling
- objects 133, 137
- patterns 115

Scratch disk 28
Scrolling images 23
Select All button 6
Selecting
- color models 79
- custom colors 86
- objects 132, 133, 134
- points 132, 134, 156

Selection objects
- defined 180
- understanding 132

Selection tools 7
- Group Selection tool 7, 132
- Object Selection tool 7, 132

Sensitivity, pressure 76
Separations, color 168
Serial number 2
Set As Quick Stroke command 104
Shape Object tools 9

Ellipse tool 10, 66
Rectangle tool 10, 65
Shape, Skeletal Strokes and 108
Shear tab 141
Shear tool 11, 141
Shear/Width handle 105, 106
defined 180
Multi-view strokes and 125
Shearing
objects 141
strokes 106, 142
Show Grid command 21
Show Rulers command 21
Skeletal Strokes
applying 102
color and 92
creating 103, 116
defined 116, 180
editing 105, 117
modes 105
randomizing 108
repeating 120
reversing 160
shape 108
width 105
Smooth button 13, 157
Smooth continuity 157
Smoothed polyline objects, creating 64
Smoothed Polyline tool 9, 64
Solid, fills 110
Source imagery 180
Source path 181
Speed, animation 127
Split Path tool 7, 159
Splitting, paths 159
Square cap 102
Squares, creating 65
Stacking objects 151
Standard toolbar 5
Starting Expression 2
Status bar 21
Stroke Definition Box tool 116, 123
Stroke Definition window 116, 123
Stroke tab 99
Stroke Warehouse palette 18, 103
preferences 27
Strokes
applying 103
attributes 99
copying 88
defined 181
editing 99, 117
fixed width 100
gradient 88
Multi-view 122
none 99
patterns and 114
repeating 120
shearing 106, 142
twisting 107
width 100
Stylus
defined 181
using 76
Subtractive color model 82, 93
defined 181
Supplemental Drawing tools 9
B-Spline tool 9, 63
Polyline tool 9, 63
Smoothed Polyline tool 9, 64
Symmetrical button 13, 157
Symmetrical continuity 157


## T


Tagging, paths 74
Tangent handles 156
defined 181
Targa file format, exporting 31
Technical support ix, 175
before calling 172
Text objects
creating 66
importing 30
on a path 67
releasing from a path 68
Text on Path command 68
Text tool 10, 66, 67
TIFF/TIF file format, exporting 31
Tile command 22
Tint 87, 181
To Bottom button 6
To Front command 70
To Top button 6
Toolbars 5
Action 12
Composition toolbar 6
displaying 5
docking 5
floating 5
Miscellaneous 15
moving 5
resizing 5
Standard toolbar 5
Status bar 21
Tools 7
Tools toolbar 7
Transformation handles 133
defined 181
Transformation palette 19, 139, 140, 141
Mirror tab 140
Rotate tab 139
Scale tab 138
Shear tab 141
Translate tab 137

Transformation tools 10, 112, 134
Mirror tool 10
Perspective tool 11, 142
Rotation tool 10, 139
Scale tool 10, 138
Shear tool 11, 141
Transformations
accumulated 143
committed 144
patterns and 112
repeating 143
shortcuts 143
Transforming objects 136
Translate tab 137
Transparency
applying 98
exporting and 29
printing and 166
TSR applications
conflicts 175
turning off 174
Twisting strokes 107

## U

Unconstrained button 13, 157
Unconstrained continuity 157
Undo
command 33
operations 33
preferences 27
Ungroup command 145
Ungrouping objects 145
Union
defined 181
operations 72
Union button 15, 72
Unlocking layers 154
Unstructure command 161
Unstructuring, objects 161
Up One button 6
Up One command 71
Use Quick Stroke command 105

## V

Value Picker 80
Vector graphics
defined 181
exporting 31
importing 30
understanding 28
Video compression 128
Video drivers, incompatibility 173
Video for Windows
animation 126
compression 128
View
adding 124
moving 126
Path 135
preferences 27
preview 135
removing 125
Wireframe 135
View All command 22
View bar 123
Viewing
objects 135
points 135, 136

## W

Width
Skeletal Strokes 105
stroke 100
Windows
arranging 22
multiple 21
Wireframe view 135
WMF file format
exporting 31
importing 30
Workspace 20

## Z

Zoom in command 22
Zoom out command 22
Zooming
in and out 22
Zoom ratio 22

# Fractal Design License Agreement

THIS LICENSE AGREEMENT IS A LEGAL AGREEMENT BETWEEN YOU, THE END USER, AND Fractal Design Corporation. IT IS A LICENSE AGREEMENT AND NOT AN AGREEMENT FOR SALE. PLEASE READ THIS LICENSE AGREEMENT CAREFULLY BEFORE OPENING THIS SEALED PACKAGE. IF YOU DO NOT AGREE WITH THE TERMS AND CONDITIONS OF THIS LICENSE AGREEMENT, PROMPTLY RETURN THE PACKAGE UNOPENED TO THE PLACE YOU OBTAINED IT AND YOUR MONEY WILL BE REFUNDED.

## Fractal Design Software License

**1) License**

This software can only be used on a single computer at any one time. This means that the software should be loaded on only one hard drive at a time. If you wish to use this software on more than one computer, you must either erase the software from the first hard drive when you move the software to a second hard drive, or else purchase two copies of the software. You may not under any circumstances have this program loaded onto the hard drives of two or more computers at the same time. You also may not copy this software onto a hard drive and then use the disks on another computer. The software may be executed from a common disk shared by multiple computers provided that one authorized copy of the software has been licensed for each computer executing the software.

**2) Copyright**

This software is owned by Fractal Design and is protected by United States copyright laws and international treaty. By law, you, the end user, may do the following:

a) make a copy of the software solely for backup or archival purposes; or

b) transfer the software to a single hard disk, provided you keep the original solely for backup or archival purposes.

United States copyright laws prohibits you from making any other copy of the software for any reason without our permission. These federal copyright laws also prohibit you from copying the written materials accompanying the software without first obtaining our permission.

**3) Restrictions**

You may not rent, lend, lease, or assign this software. You may, however, transfer the software and the accompanying written materials on a permanent basis. When you transfer the software on a permanent basis, you may not keep any copies, and you must remove the software from your hard disk. Also, the person to whom you transfer the software must agree to the terms of this License.

You may not alter, modify or adapt the software or accompanying materials. In addition, you may not translate, decompile, disassemble or reverse engineer the software. You also may not create any derivative works based on this software. A derivative work is defined as a translation or other form in which the software may be recast, transformed or adapted.

**4) Limited Warranty**

Fractal Design Corporation warrants that this program will perform in substantial compliance with the published specifications and documentation supplied in this package, provided it is used on the computer hardware and with the operating system for which it was designed. This warranty is limited to a period of 90 days from the date of the original purchase.

Fractal Design Corporation warrants that the original disks and documentation are free from defects in material and workmanship, assuming normal use, for a period of 90 days from the date of purchase.

**5) Remedies**

If you report a significant defect in performance of the software in writing, within 90 days of purchase, Fractal Design Corporation will attempt to correct it or, at its option, authorize a refund of your license fee.

If a defect in the disk or documentation occurs during this period, you may return the faulty disk or documentation, along with a dated proof of purchase, and Fractal Design Corporation will replace it free of charge.

**6) No Other Warranties**

Except as specifically provided above, Fractal Design Corporation makes no other warranty or representation, either express or implied, with respect to this software, the disks or documentation, including their quality, merchantability, or fitness for a particular purpose. In no event will Fractal Design Corporation be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the software or documentation, even if Fractal Design Corporation has been advised of the possibility of such damages.

The warranties and remedies set forth above are exclusive and in lieu of all others, oral or written, express or implied.

Fractal Design Corporation is not responsible for any costs including, but not limited to, those incurred as a result of lost profits or revenue, loss of time or use of the software, loss of data, the costs of recovering such software or data, the cost of substitute software, claims by third parties, of other similar costs. In no case will Fractal Design Corporation's liability exceed the amount of the license fee.

The warranties provided give you specific legal rights. You may have other rights which vary from state to state. Some states do not allow the exclusion of incidental or consequential damages, or the limitation of how long an implied warranty lasts, so some of the above may not apply to you.

**7) U.S. Government Restricted Rights**

Fractal Design Expression and documentation thereto are provided with RESTRICTED RIGHTS. Use, duplication or disclosure by the Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at 52.227-7013. The contractor/manufacturer of Fractal Design Expression and documentation thereto is Fractal Design Corporation, 335 Spreckels Dr., Suite F, Aptos, California 95003, (408) 688-8800.

# Fractal Design Expression Troubleshooting Worksheet

**Fractal Design Technical Support**

Phone: **(408) 430-4200**

Fax: **(408) 438-9672**

Date:_____

Your Name: _____

Phone:_____

Fax:_____

❒ Macintosh ❒ Windows

System Software version: _____

Fractal Design Software version (ex. 4.1.2)

Found on the splash screen:_____

Serial #: _____

**Description of Problem:**

Do symptoms appear: Consistently Intermittently Once only

**Describe how to duplicate the problem, step by step:**

1)

2)

3)

4)

Have you checked our Website, **www.fractal.com**, to see if the solution to the problem is already posted? ❒ Yes ❒ No

Does the problem still occur under the following conditions?

**Windows**

Using Standard VGA video driver? Yes/No

When all TSRs are off? Yes/No

**Macintosh**

When all Extensions are off? Yes/No